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ANATOMIC STRUCTURE AND FUNCTION*

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Work well done along any line of human endeavor is a satisfaction and a reward in itself. Still it behooves us to pause once in a while in the press of our labors in order to ascertain whether the direction which we are following is the correct one, whether there is promise of progress commensurate to the effort employed or whether a shifting of the point of attack or a change of the means employed may not give better result. This seems to apply with special force to pathology at the present moment, when we hear such warnings as that addressed to us by Yandell Henderson, who, in 1911, stated before this section that "a man trained by autopsy and microscope is inevitably a morphologist. Just in proportion as he is fitted to deal with morphologic processes he is unfitted to handle and expound functions of a physical nature—unless, of course, he happens to be an all-around genius," or when we hear the repeated admonition of such men as Meltzer to pay less attention to morphologic problems and more to functional studies. If Henderson's assertion is at all correct, present conditions are truly deplorable, because many men have been and still are being trained by necropsy and microscope and if this study unfits them to understand function in its proper light, the sooner all efforts in this direction cease the better, because I cannot conceive of any object in morphologic research except as a help to the clearer understanding of function.

The question of the relation of structure to function is the great biologic problem, if we take structure in its broadest sense as including the structure of the chemical substances which make up the living protoplasm. In the last resort our interpretation of the relation of structure to function will rest on our conception of the relation of force to matter, and, as I believe we are all agreed that these two expressions designate merely two human ways of looking at the same thing, we might come to the conclusion that the whole discussion is idle and entirely futile. I do believe that this identity, if I may say so, of structure and function is sometimes lost sight of to the detriment of scientific reasoning, although nature, if we only look at it with open eyes, constantly reminds us of this fact, no more commonly perhaps than in the field of pathology. Looking at the question from this broadest point of view it does not require much of an argument, for instance, to convince us that function determines structure just as in its turn structure determines, delimits—that is, places definite limits on function. Still, what we grant theoretically, must be worked out practically. It is with the practical imperfection of our knowledge that we are concerned and with the question of how best to improve on it.

Any student of medical history knows how much our knowledge of physiology has advanced with the gradual progress in gross anatomy and how much more many of the intricate problems were clarified by the knowledge of the finer structure of the tissues as revealed by the microscope. Our fundamental conceptions with regard to the cell as the living unit, with regard to cell life and cell activity, could not have been arrived at without the help of the microscope, and on this same solid basis of gross anatomic and histologic knowledge rests modern physiology, and with that pathology.

It is only natural that the splendid advances made by the introduction of the microscope aroused excessive expectations in the minds of some as to what might be accomplished by the use of this instrument. We certainly know now that it has its great limitations so far as power of vision and its applicability to living tissue is concerned; nevertheless, the insight which we have gained by means of it into physiologic and pathologic processes is truly remarkable.

If I may speak from the point of view of a pathologist, the condition of affairs at present seems to be something like this:

There exists quite a large and constantly growing territory in this science in which our knowledge of the gross and microscopic anatomy furnishes a very adequate explanation of the functional disturbances which we observe during life. This is especially true if we include parasitology, gross and microscopic, although here also the limit of usefulness of the microscope is being reached as shown by the experiments with filtrable virus.

It must be emphasized, however, that structural change does not necessarily mean change in function. I believe that in this regard the importance of minute histologic lesions in the tissue has been greatly exaggerated. We must constantly bear in mind, especially in the important glandular organs, the existence of a large amount of reserve tissue which must be eliminated before the function of the organ as a whole will be affected. We also have to take into account the remarkable power of regeneration and of compensatory hypertrophy which these organs possess. Even when we give due consideration to these

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facts, however, it is often astonishing how well an organ has functionated during life in spite of the finding at necropsy of pretty definite and fairly diffuse lesions.

In fact, in some cases, the question arises whether the lesions which we find associated with disturbance of function are really the cause of the disturbance or merely concomitant. The mere fact that the development of clearly manifest lesions usually consumes considerable time (usually twenty-four hours and often much more) is very suggestive in this regard. If the lesions are to be the cause of the disturbance in function which we observe, they must precede the disturbance, but should not follow it. If, for instance, we produce a disturbance of the renal function by means of some renal irritant which manifests itself by albuminuria we observe the disturbances of function, if the irritation is sufficiently strong, within less than one hour, at which time even the most careful histologic study fails to reveal any change, whereas well-marked anatomic lesions develop as a rule in the course of the next twenty-four or thirty-six hours. Such lesions cannot very well be the cause of the disturbance in function; still they do indicate that by the insult the cells were injured in such a way as to lead eventually to a change in their structure. In other words, what we see is not the cause of the disturbance in function but the final result of a cell injury the actual nature of which is not demonstrable by the means at present at our disposal. This appears to me to be the reason why so many of the degenerative lesions resemble autolytic changes which take place in the dead tissue. Still, they are valuable, because after a while at least they do show us that the cells have been injured. I believe, however, that it is worth while to emphasize this fact that sometimes the lesions are secondary to a primary insult not associated with demonstrable anatomic changes because in the hurry of our teaching or in the abbreviated parlance of even scientific reports it is often lost sight of.

It has been said by some that further efforts in the refinement of our technic in this direction are apparently hopeless and a mere waste of time, and there may be some grain of truth in this statement. Still, I believe it is hazardous to prejudge a case of this kind and it would seem to be better policy to encourage men who have a natural bent along these lines, because, after all, the better the fundamental facts relating to the structural minutiae of the cells are worked out, the more secure the structure of our scientific edifice will be.

On the other hand, I know, from personal experience that there are large and important fields in pathologic anatomy which need much new work before they are anywhere near their possible completion. From this point of view, in many cases, the surface seems hardly to have been scratched. The common types have been fairly well established, but the more intricate problems, especially again in relation to the functional disturbances, have been hardly worked up at all. When we descend from the textbook picture to the individual case and to a careful scrutiny of its individual problems, we find no end of stimulation to investigation and research, even along anatomic lines.

In our study of function we cannot of course rest entirely on an anatomic basis, because evidently many problems connected with this subject are not open to anatomic investigation. The structural changes which underlie them are so minute that they cannot be approached by means of the scalpel or the microscope. Recently, for instance, studies have been carried on in our laboratory in regard to the severe disturbances in nitrogen metabolism which follow anaphylactic shock. They do not seem to be associated with any discernible lesions in any of the important organs, in spite of the fact that they persist for a considerable period of time and eventually cause the death of the animals. This is by no means an isolated example even if we exclude from consideration the central nervous system, the mysteries of which, in spite of great advances in our knowledge, are still so baffling.

In many of these problems undoubtedly chemistry or physical chemistry will step in and furnish us new clews. Judging from the material which has already accumulated along these lines the prospect for further important developments seems to be unusually bright. Still there are intrinsic difficulties in method which it will be difficult to overcome. As Meltzer has pointed out, chemical research labors under the same disadvantage as pathologic anatomy in dealing largely with dead material. There is also the distinct disadvantage of being confined so far to rather gross procedures which do not permit of a utilization of our knowledge of the finer histologic detail of the organs studied.

Microchemistry, that is, the application of chemical methods to histologic sections, has bridged over this gap in some instances and may do so in more, but, unfortunately, characteristic chemical reactions are to be obtained from bodies only when they are more or less dissociated, and the more intimately they are bound up with the living protoplasm, the less easily they are detected by chemical means without resorting to violent interference.

On account of these difficulties in the way of a direct application of exact chemical and physicochemical methods, a large body of hypotheses has developed which is based on our present knowledge in organic chemistry, but which, so far, is beyond the reach of actual demonstration. I need only to allude to our chemical conceptions with regard to enzymes, toxins and the various immunity reactions in order to bring out this point clearly. It is to be hoped that a refinement of our present methods will permit us eventually to develop this knowledge to a satisfactory conclusion, and if we do succeed, our ideas with regard to the relation of chemical structure to function will necessarily be advanced immeasurably.

Progress along any of the lines mentioned—pathologic anatomy, parasitology, biologic chemistry and biologic physics—is absolutely impossible without experimental work. In fact, the animal experiment is the touchstone to any new idea which may develop in the field of biology, including medicine. The final proof of any contention in the biologic sciences rests in the animal experiment. On the other hand, the experiment needs the control of the other methods in order to make quite certain that the experimental results are applicable to the case in question.

The experimental study of function itself is naturally of the greatest importance, quite immaterial whether we understand the underlying factors or not. For practical purposes the value of such experimental researches may be so great that it may well be questioned whether some of the energy now directed to the elucidation of more obscure general problems could not with advantage be diverted along these new

and fruitful channels. If we know the modifications in function arising from physical or chemical changes in the environment of the functionating cell, we at once obtain means of controlling such function more or less, and what this means to the physician who has to deal with manifestations of disturbed function in his patients needs no amplification. In this way he frequently may obtain the desired effect in spite of the fact that the ultimate mechanism of the action is unknown, and a complete knowledge of the same possibly unattainable.

Such studies of function under carefully selected and well-controlled experimental conditions may also permit of very interesting conclusions with regard to the mechanism involved. Our knowledge of the chemical control of glandular function has been obtained in this way. There is also no question that some serious errors arising from a merely anatomic study of the parts involved have been corrected by this method, but after all it is a method with its own advantages and its own palpable limitations like all others.

In conclusion, then, I wish to emphasize that our goal of a thorough understanding of the biologic processes in health and disease cannot be reached by one method alone. Men with varying inclinations and varying training have to cooperate in order to make progress, and the more intricate our problems grow the more the necessity of such cooperation becomes evident.

It is of course an impossibility for any man to be a master in all branches of biologic research, but a fair degree of familiarity with all is necessary, to produce, if I may borrow a German expression, a friendly understanding, to avoid misconceptions and the development of that narrowness of view to which I imagine Professor Henderson wished to refer. I believe that laboratories in pathology, just like those in physiology, pharmacology, hygiene and clinical medicine, should be ready at any time to take up a problem from whichever point of view appears to be the most hopeful, with whatever methods seem to be indicated, and, if necessary, from as many points of view and with as many variations in method as seem desirable.

THE PRESENT STATUS OF PYELOGRAPHY *

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Sufficient evidence is furnished by the excellent work of Braasch and many others to establish without question of doubt the value of pyelography in the diagnosis of surgical diseases of the kidney and ureter. Additional testimony based on our own experience would mean merely a repetition of what has already been stated. Another phase of the subject, which is of equal importance and forms the theme of this paper, is the consideration of the harmful results that may follow collargol injection, its indications and limitations.

When we first began the use of pyelography, we shared the opinion of others that the injection of collargol into the renal pelvis was free from danger and employed it routinely in all cases presenting symptoms which might be due to renal pathologic conditions. In the course of time we became convinced of the error of such a procedure. With increasing knowledge acquired from our own experience as well as that of others, we have put a decided limitation on the cases suitable for injection and have formulated a technic which we believe will reduce the disastrous sequelae of pyelography to the minimum.

That collargol produces little or no irritation of the pelvic mucosa seems to be proved by clinical and experimental evidence. Following injection in twenty of our cases, the urine rapidly lost the collargol stain, and microscopic examination was normal or showed only a slight excess of leukocytes with an occasional erythrocyte. Kidd[1] reports similar results. In his discussion of Kidd's paper, Walker states that he "has operated on a number of cases within a few days of the collargol examination and in every case the lining membrane of the renal pelvis was healthy and glistening even when the pelvic contents were deeply stained

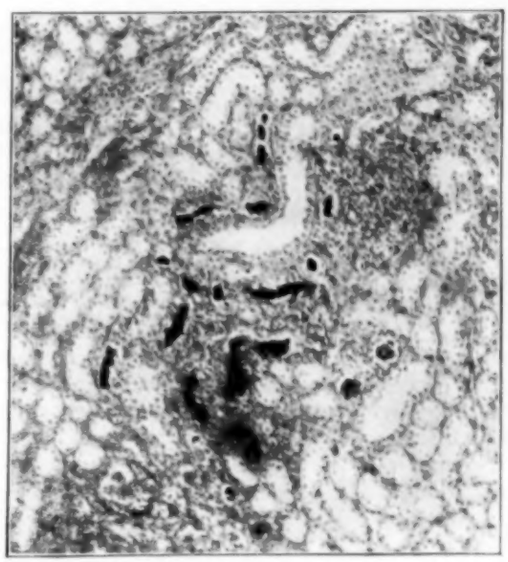

Fig. 1.—Early tuberculosis of the kidney. From photomicrograph. Intense infiltration of collargol throughout all portions of the section, with well-marked destruction of kidney structure. High pressure used in making the injection.

with collargol. In some cases where nephrectomy was performed the mucous membrane was normal microscopically." This coincides with our own findings; in both specimens illustrated in this paper, the lining epithelium of the pelvis is normal although the kidney shows wide-spread changes. Blum,[2] on the other hand, reports extensive necrosis, but, as Strassmann[3] points out, his experiments are open to criticism in that he used post-mortem specimens, and the changes which he ascribes to collargol could well have been cadaveric. The burden of proof, therefore, is that, so far as the renal pelvis is concerned, collargol is harmless.

That the injection may have a decidedly injurious effect on the kidney has been shown repeatedly and almost without exception; the pathologic reports detail the same results, namely, the tubules filled with collargol, which may extend into Bowman's capsules, rup-

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

1. Kidd, Frank: Proc. Roy. Soc. Med., 1913, vii.
2. Blum: Wien. med. Wchnschr., 1912, No. 19.
3. Strassmann: Ztschr. f. urol. Chir., March, 1913, p. 126.

ture of the tubules, peritubular round-cell infiltration, renal infarcts or areas of cortical necrosis. Strassmann alone maintains that the tubules are free, the collargol being taken up by the renal lymphatics or tissue clefts. The experimental work of Tennant,[4] Oehlecker,[5] Kidd and others, conclusively proves that collargol gains entrance to the kidney by way of the tubules and that the extent of involvement is directly dependent on the degree of pressure exerted in making

Fig. 2.—Same specimen as shown in Fig. 1. From photomicrograph. Argyrol in Bowman's capsule, also permeating the kidney tissue with a moderate degree of necrosis and round-cell infiltration.

the injection as well as the time that the solution is allowed to remain in the pelvis. The same results are reported clinically by Mason,[6] Tennant[4] and Troell.[7] The accompanying photomicrographs (Figs. 1, 2 and 3) depict similar conditions. These injections were made during our earliest experience in pyelography and represent the ill results that may attend imperfect technic in types of disease in which, if used at all, the injection must be made with the greatest skill and care. Severe pain followed both injections and confirms Tennant in his statement that pain following collargol injection may have a graver significance than the mere overdistention of the pelvis, indicating the passage of the solution into the renal parenchyma.

The question naturally arises, Is the kidney permanently or seriously injured by collargol in the absence of superadded infection or such extensive lesions as infarction or necrosis? Pathologic evidence and clinical experience seem to indicate that this can be answered in the negative. Leukocytes, a few red blood-cells and hyaline casts may be present immediately following injection, but these soon disappear. Even in those cases in which violent pain and high fever have followed, such as reported by Vest[8] and Zachrisson,[9] the urine sooner or later returns to normal.

4. Tennant: Ann. Surg., 1913, lvii, 888.
5. Oehlecker, F.: Fortschr. a. d. Geb. d. Röntgenstrahlen, 1911, xvii, 195.
6. Mason, J. M.: Dangers Attending Injections of the Kidney Pelvis for Pyelography, THE JOURNAL A. M. A., March 14, 1914, p. 839.
7. Troell: Hygiea, 1913, 75, p. 176; ref. in Zentralbl. f. ges. Chir. u. d. Grenzgeb., 1913, i, No. 16, p. 829.
8. Vest: Bull. Johns Hopkins Hosp., March, 1914, p. 74.
9. Zachrisson, F.: A Case of Collargol-Injection into the Tubuli Recti of the Kidney, Nord. Med. Ark., 1911, xi, ref. in Zentralbl. f. Chir., 1911, No. 50.

Evidence is available, therefore, which shows that wide-spread lesions of the kidney may result from collargol injection and as a rule go hand in hand with overdistention of the renal pelvis. In many cases, collargol may find its way into the straight tubules, but the resulting irritation of the renal parenchyma is usually trifling and produces no permanent injury. That a substance may be found which will be non-irritating as well as impermeable to the Roentgen ray is to be hoped for. Kelly and Lewis[10] advocate silver iodid but their report is too meager to warrant acceptance until further accurate experimental and clinical evidence is submitted.

Our experience, together with a study of the cases reported in literature, convinces us that too much stress has been put on the supposed corrosive action of collargol, while in reality the fault lies in the method of injection or its application in types of disease which favor rapid permeation of the renal tissue.

As the result of his experiments with Berlin blue and other inert anilin dyes, Marcus[11] demonstrates with what ease trauma to the pelvis and kidney may be produced by even low pressure. If no injury were present, the coloring-matter merely lay in the pelvic clefts or ascended occasionally into the collecting tubules at the papillae, but was never found in the intratubular tissue. When the dye was found in the veins of the kidney, he invariably demonstrated a traumatic site of entrance in the pelvis or renal parenchyma. Under high pressure, it was an easy matter to produce a migration of any inert substance from the pelvis to the renal vein by way of the kidney, with emboli in various organs. He also shows, experimentally, that the site of rupture determines the area permeated by the dye which may be found in the renal vein, the subcapsular space or the peripelvic tissue.

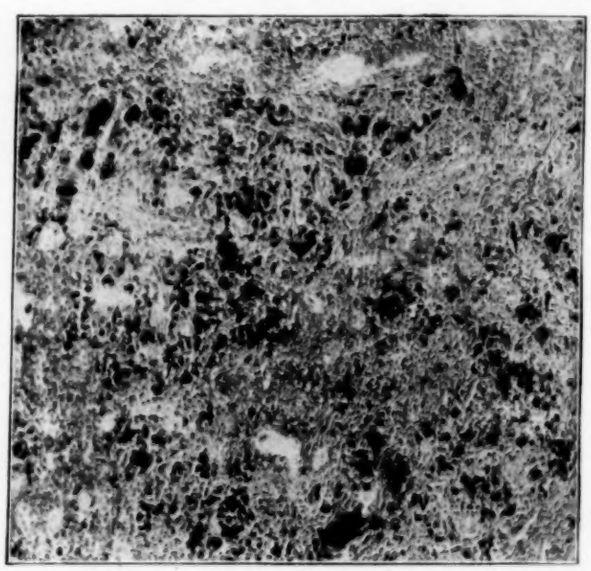

Fig. 3.—Pyelonephritis and hydronephrosis. From photomicrograph. Fifty c.c. of a 10 per cent. argyrol solution were injected under high pressure. In this section the argyrol is confined within the tubules; the kidney tissue is well preserved.

The experimental work of Lewin [12] was done along similar lines and with like results, although he does not emphasize the importance of trauma as the exciting

10. Kelly and Lewis: Surg., Gynec. and Obst., 1913, xvi, 707.
11. Marcus: Wien. klin. Wchnschr., 1903, No. 25.
12. Lewin: Arch. f. exper. Path. u. Pharmakol., 1897-98, xl, 287.

factor in permitting the escape of the injected fluid. Emboli were found in the right heart, lungs and liver, corresponding to the recent report of Eisendrath[13] and differing only in the fact that he used an anilin dye instead of collargol. The experiments of Strassmann, Kidd and Tennant, previously referred to, substantiate the findings of these investigators and show the possi-

Fig. 4.—Calculus pyonephrosis showing diffuse permeation of collargol throughout kidney. Type of case unsuitable for pyelography.

bilities of danger which attends injection under high pressure, and also the relative freedom from danger when little or no distention of the pelvis is produced.

It is doubtless true that, in the earlier days of pyelography, many instances of severe pain or disastrous results following injection were due to an erroneous conception concerning the capacity of a normal pelvis. At that time the limits were stated by various observers as varying from 15 to 30 c.c., while at present we know that the capacity is between 2 and 5 c.c. It is only natural to assume, therefore, that, in making the injection, the normal capacity was many times exceeded.

We are firmly convinced that solution of continuity of tissue, whether by ulceration, or direct or indirect trauma, plays an important rôle in permitting the escape of collargol from the pelvis. The work of Marcus already referred to shows how even low grades of distention can break the pelvic lining in normal kidneys. In kidneys altered by disease, whether this be a thinning out as in hydronephrosis, an ulceration as in tuberculosis or tumor, or increased friability due to pyogenic infection, it is self-evident that ruptures of varying degrees are more prone to result. Of the reports in literature of cases in which extensive changes have been produced by collargol, it is interesting to note three cases of hypernephroma (Mason, Oehlecker and Rössle[14]), one case of pyonephrosis (Troell) and one case of suppurative pyelonephritis (Schwartzwald[15]).

To these we add the cases herein reported, one of early tuberculosis and the other chronic pyelonephritis and hydronephrosis (Fig. 4). This is sufficient evidence to indicate that such lesions may act as at least contributing factors in the dissemination of collargol throughout the kidney, since they furnish ideal conditions for the production of a portal of entrance.

The effect of direct trauma by the ureteral catheter is nicely shown in the specimen of Mallory reported by Mason: "The collargol was injected into the kidney tissue as a result of running the catheter too far into the pelvis of the kidney. Evidently the point of the catheter went into a calyx and the fluid was injected under pressure into that calyx." Any one experienced in ureteral catheterization knows that unless the greatest care is used, it is an easy matter to traumatize the pelvis sufficiently to produce bleeding and thus bring about a condition similar to that seen in the specimen just mentioned.

Reviewing the cases reported in literature from the clinical point of view, pain following injection is the most frequent symptom. This may be very severe, requiring morphin for its relief, and persists for several hours or even days. Pain may follow the most careful manipulation in passing the catheter or the injection of only a few drops of collargol. In our experience this has occurred only rarely; when severe pain has resulted, it has been due to our faulty technic of catheterization or injection. When pyelography was first undertaken, we were inclined to ascribe this

Fig. 5.—Colon bacillus pyelitis with marked dilatation of pelvis due to ureteral kink. Symptoms relieved by pelvic lavage. The usual methods of treatment together with autogenous vaccines had been unsuccessful.

pain to the irritation of the collargol, and varied the percentage of the solution from 1 to 10, with no apparent relationship between the strength of the solution and the intensity or absence of pain. It was evident that some other factor was active. We found

13. Eisendrath, Daniel: The Effect of Injecting Collargol into the Renal Pelvis, THE JOURNAL A. M. A., May 2, 1914, p. 1392.
14. Rössle: Tödliche Kollargolvergiftung, München. med. Wchnschr., 1911, lviii, 280.
15. Schwartzwald: Beitr. z. klin. Chir., lxxxviii, No. 2.

that the frequency of pain was greatly diminished by inserting the catheter only part way up the ureter instead of into the pelvis. This plan is open to criticism in that it gives no idea of the pelvic capacity, but it does indicate that the avoidance of trauma to the pelvic mucosa is an important factor in lessening the harmful results, of which pain is often the only

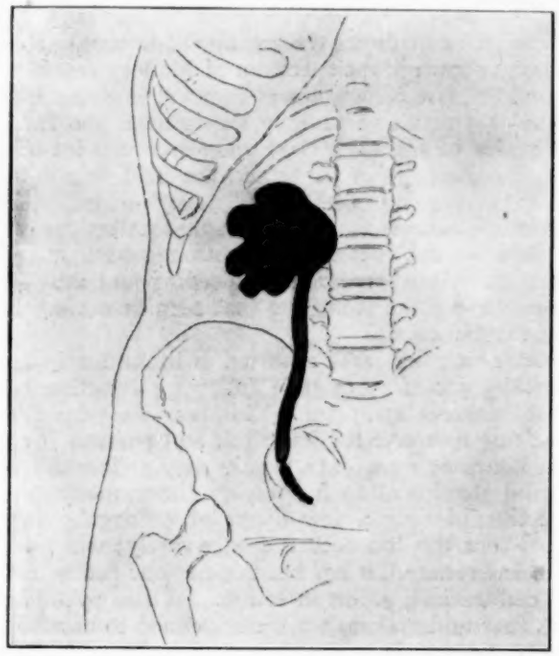

Fig. 6.—Stricture of ureter. Marked dilatation of ureter above stricture, and pyelonephritis of gonococcal origin. Pyelography was employed in order to eliminate calculus as a possible cause of ureteral obstruction. Lavage and collargol instillation resulted in temporary improvement.

symptom. As further proof of the ill effects of trauma, we have observed that pain almost constantly accompanies injection in cases in which bleeding follows catheterization.

The second and by far the most important cause of pain is overdistention of the renal pelvis. Whether we accept the evidence of Marcus that overdistention produces solution of continuity of the pelvic lining, or of other observers that the collargol ascends directly into the straight tubules without previous pelvic injury, the fact remains that, as a rule, the degree of permeation in the kidney is in direct relationship to the amount of pressure exerted by the distending medium.

We are in full accord with Tennant's statement that pain indicates in many instances the passage of collargol into the kidney tubules, and is not merely a colic incident to an overfilled pelvis. If the latter were true, the pain should cease shortly after the relief of pressure rather than persist for hours or days. We ascribe it to increased tension of the renal capsule, produced primarily by the sudden increase in volume of the kidney due to the entrance of collargol, and secondarily to reactive changes within the kidney incident to the injection of a mildly irritating, foreign substance. In seventy cases in which the piston syringe was employed, pain resulted in over 10 per cent.; in our last thirty cases, we have used the gravity method of injection as recommended by Thomas[16] with no pain whatever, proving conclusively its great advantage over the older method.

Several cases are reported in which fever has followed injection, persisting for days and in a few instances attended by the development of perirenal suppuration. As first pointed out by Voelcher and observed by Braasch and many others, collargol is not uncommonly found in the peripelvic tissue and produces little or no inflammatory reaction. We are convinced that a rise in temperature is due not to collargol *per se*, but that faulty technic has permitted the introduction of infection, with collargol as the medium by which it is carried to the kidney or its surrounding tissues.

Lastly, three deaths are reported as occurring after collargol injection. The often-quoted case of Rössle has been criticized by Strassmann who advances arguments which tend to disprove that collargol was the cause of death. More recently a second case is reported by Rosenblatt and Morgandies,[17] in which a state of shock developed at the time of injection with death several hours later. In this case of suspected hydronephrosis, 40 c.c. of a 5 per cent. collargol solution was injected without difficulty. A post-mortem examination was not performed nor was the kidney examined microscopically. The perirenal tissues were widely infiltrated with collargol, there was no collargol in the pelvis or ureter and only a "minimal" tear was visible in the kidney tissue. In a case reported by Vest, death resulted on the fourteenth day after operation. Acidosis and acute dilatation of the stomach were postoperative complications. Vest does not

Fig. 7.—The roentgenogram failed to demonstrate a calculus. The catheter met an obstruction 13 cm. from the ureteral orifice. By means of a collargol injection, the calculus was clearly defined, together with a hydro-ureter and hydronephrosis.

assert that death was due to collargol poisoning, but draws attention to the interesting fact that, as in Rössle's case, hemorrhagic diathesis developed a few days before death. In his preliminary report, Eisen-

16. Thomas, G. J.: An Apparatus for the Injection and Lavage of the Pelves and the Ureters, The Journal A. M. A., Jan. 18, 1913, p. 184.

17. Rosenblatt and Morgandies: Verhandl. d. deutsch. Röntg. Gesellsch., 1913, ix, 81.

drath has shown experimentally that death may result from emboli in various organs, but this has occurred only when collargol was injected under very high pressure. That similar results may follow injection in man is of course true, but with ordinary care and skill, we can state without fear of contradiction that this danger can be entirely eliminated.

Fig. 8.—History in this case indicated ureteral calculus. A small cystic mass lay to the side of the uterus and the roentgenogram showed a shadow along the course of the ureter. Pyelography demonstrated a normal pelvis and ureter and an extra-ureteral shadow, which operation proved to be a tooth in a dermoid cyst.

CYSTOSCOPIC TECHNIC

Basing our ideas on experimental evidence as well as clinical experience, we have formulated certain points in technic which, in our opinion, are of importance in avoiding the untoward results of collargol injection. The greatest care as regards asepsis cannot be too strongly emphasized. The ureteral catheter should not exceed No. 6 in size, it must be free from rough surfaces and pliable so as easily to follow any change in the course of the ureter; to avoid trauma, we never use a stiletted catheter. The catheter is inserted for a distance of 20 cm. and its further progress is made extremely slowly until the slightest buckling occurs, which indicates that its tip has reached the pelvis. It is then withdrawn 1 or 2 cm. and the character of the urinary outflow is observed to determine, if possible, the presence or absence of pelvic dilatation. The catheter is then withdrawn 10 cm. and the injection made. By so doing the danger of wounding the pelvis is minimized and the tip of the catheter is below the level at which the majority of ureteral kinks are found.

If the urine is blood-stained, the injection is not made, a subsequent examination being advised at an interval of at least seven days. When an obstruction is encountered along the ureter, we do not attempt forcibly to overcome it, but pass a smaller catheter; if its passage is likewise impeded, the collargol is injected and in the majority of instances, will find its way upward. The forcible passage of the ureteral catheter is to be condemned under any circumstance, but this is especially true when injection is to follow. We are opposed to the routine practice of simultaneous injection of both kidneys; when bilateral disease is suspected, the injections are made at two sittings. If for any reason, the roentgenogram is unsatisfactory, we make it a rule to allow several days to elapse before attempting a second injection.

The collargol is freshly prepared for each case; the crystals are thrown into a small mortar containing boiling water and when cooled are thoroughly dissolved by stirring with a pestle. The solution is filtered through cotton and gauze and is ready for injection. The strength of the solution varies from 5 to 10 per cent., depending on the thickness of the abdominal walls. In making the injection, we use a 30 c.c. buret connected with a short tube and stopcock. To start the flow through the catheter, elevation of the buret to about 3 feet will be necessary but it is immediately lowered and allowed to flow in at an elevation of not more than 1 foot with a No. 6, and 2 feet with a No. 5 catheter. The injection is discontinued when the column of collargol ceases to fall or the patient experiences the first slight sensation of fullness in the kidney region. After the picture is taken, the collargol is drained off and the catheter removed.

We make it an invariable rule to keep our patients under observation in the hospital for twenty-four hours after injection and prescribe copious draughts of water during the first six hours. When retention from

Fig. 9.—Ptosis of the left kidney with hydronephrosis. The catheter met an obstruction 4 cm. from the ureteral orifice. Pyelography demonstrated that the obstruction was not pathologic, but due to an abrupt change in the course of the normal ureter.

angulation of the ureter due to ptosis is suspected, the patient is required to remain in bed for twelve hours after the injection. This facilitates free drainage of any collargol that may remain in the pelvis of the kidney.

ROENTGENOGRAPHIC TECHNIC

The diagnosis of renal and ureteral conditions by pyelography depends on the correct interpretation of the roentgenogram made immediately after a careful ureteral catheterization and injection with the opaque solution. While each step is of equal importance, and each without the other is of little or no value, roentgenography plays but a minor part in the procedure as a whole. It is to be regarded simply as a means of accurately demonstrating and recording what the cystoscopist has done. The real value of the method arises in a very large measure from the technic of the cystoscopist in creating correct appearances for the roentgenogram to portray in order to demonstrate existing conditions accurately.

When employed as a safe and necessary procedure, pyelography has a very limited range of application as compared to the usual routine roentgenoscopy of the urinary tract. It is to be employed, as a rule, therefore, only after the usual methods have failed to show any condition satisfactorily explaining the clinical phenomena present. Certainly, whenever calculus is suspected, the usual routine roentgenoscopy should always be resorted to first, as the injection of collargol may not only be unnecessary but is likely to interfere with the detection of a stone, especially in the kidney. Instances are recorded, on the other hand, in which the colloidal silver injection has rendered a calculus sufficiently opaque to cast a perceptible shadow when it was not detected by the simple roentgenoscopy alone. We are able to cite one experience of this kind in connection with a ureteral stone which was distinctly shown by the collargol injection, whereas no shadow could be detected in roentgenograms made at previous and subsequent examinations in the usual manner. Of course, such instances are exceptional.

Fig. 10.—Beginning dilatation of the pelvis in a case of nephroptosis.

There is little to be said of the roentgenographic technic *per se*. Preliminary preparation of the patient is always essential, and comprises the withholding of food, pills and tablets, and the thorough evacuation of the intestinal tract. As we have found castor-oil disagreeable and not always satisfactory in removal of gas, we have recently adopted the use of compound cathartic pills pulverized and administered in capsules, and have found this procedure more efficacious.

Compression, which is so essential in the usual roentgenoscopy of the urinary tract, had best be avoided in connection with pyelography, for obvious reasons. When stout individuals are to be examined, the intensifying screen may become essential, if not used routinely.

In the early days of pyelography, Stover advocated the use of a table whereby one exposure could be made in the usual horizontal posture, and repeated immediately in the semirecumbent or vertical position by tilting the table. Such a procedure is obviously useful in the diagnosis of ureteral kinks associated with movable kidneys, but we have found it by no means essential. The substitute performance of having the patient get off the table and stand for the second exposure is to be condemned.

In our analysis of the cases reported in literature, it is evident that the harmful effects of collargol have, in many instances, been due to sins of omission or commission on the part of the operator and should not be held to the discredit of the injection itself. On the other hand, it has been shown that, even with the greatest skill and care, there are possibilities of danger which should serve as a warning against the indiscriminate injection of collargol, irrespective of the underlying pathology. For this reason, we resort to pyelography only when an accurate diagnosis cannot be made by other methods of examination.

We are opposed to its use in depicting interesting anomalies when such a procedure means merely a graphic representation of what may be accomplished by the method. We are likewise opposed to its indiscriminate use in all types of renal pathology; for experimental as well as clinical evidence indicates that possibilities of harm are certainly increased in the presence of ulceration, infection or retention of the solution in the pelvis. For this reason, with only rare exceptions is the injection made in suspected cases of neoplasm, tuberculosis or large hydronephrosis. Likewise, in those infections other than tuberculosis, we hesitate to employ collargol until other methods of diagnosis have been exhausted. It is of the utmost importance in the treatment of pyelitis to determine whether we are dealing with a mechanical dilatation of the pelvis with superimposed infection or with a true primary infectious pyelitis, and if other methods fail to reveal the desired information, the risk of pyelography is far outweighed by the accurate data which it affords.

When renal or ureteral calculi can be definitely recognized in the roentgenogram, little or no additional information will be afforded by pyelography; the injection is indicated only when the position and character of the shadow make it impossible to determine whether it lies within the kidney or ureter or in adjacent structures. This applies especially to those cases in which in addition to the shadow along the course of the lower ureter, the catheter meets with an obstruction at a corresponding level. Such evidence is of course strongly in favor of calculus, but is by no means positive, since inability to pass the catheter above a certain level is not infrequently due to an

abrupt change in the course of the normal ureter. This point will be quickly determined by the presence or absence of ureteral dilatation above the site of obstruction.

The pyelograph serves its greatest field of usefulness in detecting the earlier stages of hydronephrosis due to mechanical blockage of the ureter other than that caused by stone. In fact, it is the only means at our command which permits the diagnosis to be made without question of doubt. This applies likewise to certain congenital anomalies, especially the horseshoe and the dystopic kidney. Under these circumstances, if proper technic be employed, collargol injection can be made with but the barest possibility of harmful sequelae.

That exceptions to these general rules in the selection of cases will arise from time to time, is quite obvious, but such exceptions are rare, and in no way detract from the general principles which we have formulated for our own guidance. We may err on the side of conservatism, but we are satisfied that it is likewise on the side of safety, for we are convinced that possibilities of danger exist even under the most ideal circumstances. In the majority of instances, however, disastrous results following collargol injection have been due not to the use but to the abuse of the method, and we are confident that if greater care be given to the technic of injection as well as to the selection of cases, the dangers of pyelography will be of minor importance as compared to the valuable information which its use will afford.

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ABSTRACT OF DISCUSSION

DR. W. F. BRAASCH, Rochester, Minn.: Undoubtedly Drs. Keene and Pancoast should be given great credit for calling our attention to the possibility of ill results from the use of pyelography. If we remember the history of cystoscopy we shall recall that illness and death were reported, so that for a while the method fell into discredit. Ureteral catheterization also was criticised so severely that many would not permit patients to be so treated. While undoubtedly its abuse may cause harmful results, nevertheless it will remain as an invaluable method of diagnosis in conditions in the ureteral tract. It is a peculiar thing that of the deaths recently reported as the result of pyelography, the cases have been almost entirely in the hands of men of little experience. Our experience in 2,000 cases treated with pyelography has not given us serious results which could be ascribed to its use in any case. In my early use of the method I have observed three cases of cortical lesion in which I should not have used it. I have laid down the fundamental rule never to make more exploration of the tract than is necessary for diagnosis. There is a long list of conditions in which I have diagnosed obscure symptomatology which could not have been diagnosed in any other way. Our endeavor should be to find some substance which is harmless and which can be injected without causing the colloidal poisoning. If drainage is interfered with there will be trouble; if the kidney is overdistended there will be trouble. By means of the gravity method we have overcome the dangers of overdistention, but we cannot always overcome the dangers of overretention, but the dangers are reduced to a minimum. The silver iodid advised by Kelly seems to me to be a valuable adjunct. It cannot be employed in the gravity method, but must be employed with the syringe because of its viscidity. The ideal substance should be sufficiently liquid to be used in the gravity method and one which would not cause necrosis if retained. Pyelography should be in the hands only of men with wide experience in the work.

DR. HENRY DAWSON FURNISS, New York: There are still many dangers in pyelography, due to the mechanical insult of its performance and to the irritating effect and toxicity of the substances used. The ideal substance must be non-irritating, non-toxic and soluble in both water and the blood. Eisendrath has done some good experimental work in the injection of argyrol and collargol under pressure, and has found these substances not only in the tubules of the kidney, but also in the interstitial connective tissue, as well as in other organs of the body. The wide distribution he found due to entrance of the collargol through ruptured veins. In the Genito-Urinary Section were reported four or five fatalities following the use of collargol. In some, death was within a short time and in others followed within ten days or two weeks. In these late fatalities a hemorrhagic condition developed, with bleeding from the mouth, nose, stomach and under the skin; there were superficial ulcers in the mouth. In making pyelographs, my technic is to fill the bladder with boracic acid solution, put the patient on the table, have the Roentgen-ray plate and tube adjusted, then catheterize the ureter using a soft No. 5 or 6 catheter, clamp the cystoscope in position with a holder, and then make the injection under gravity. This saves a lot of unnecessary moving of the patient, which is disagreeable and tends to displace the catheter. The soft catheter is used, as stiff ones are capable of injuring the kidney substance so that the collargol can enter the circulation of the kidney substance. By using small catheters there is less danger of harm, as the collargol can escape alongside of the catheter. Even with the most careful technic severe pain often attends making a pyelograph. I am of the opinion that the pain is due to other factors than the simple distention, as I have never noticed such long and severe pain in the cases where I have distended the renal pelvis for diagnosis according to the method of Kelly. I agree with Drs. Keene and Pancoast that pyelography is a most valuable diagnostic aid and one to be used only when other methods do not furnish us the necessary knowledge. It is especially useful in early hydronephrosis and easily passable strictures of the ureter.

DR. D. N. EISENDRATH, Chicago: I have had occasion to use pyelography a great deal but have felt that I was not justified in using it with the syringe, unless I knew just where the danger-line was. In my first case the patient, who was 54 years old, died within half an hour after the injection. I made up my mind there must be some reason why the collargol in the urine caused trouble. We knew that the gravity method was apparently the safest and so we elevated a column of collargol 3½ feet above the level of the table and caused a pressure of 30 mm., injecting a certain series of animals with 10 per cent. collargol, about 8 ounces, and killed them at different intervals. We were the first to use the manometer and by measurement were able to state the exact amount of pressure used to inject the collargol into the high renal pelvis. In this first series there were no changes; we could find no collargol except in one kidney. We had proved, experimentally, that the collargol was perfectly safe so long as we did not raise the pressure above 30 mm. In the second series we increased our pressure from 30 to 70 mm. and still kept as close as we could to the capacity of the renal pelvis of the dog—from 2 to 7½ c.c.—seldom over 5 c.c. The animal lived. There was collargol in the lungs, in small quantity in the liver and in the kidney. In the animals that lived for thirty days after the experiments, what Drs. Keene and Pancoast have said, was true; the collargol did not kill off the epithelium, but we got much inflammatory reaction. Then we decided to increase our pressure. The first animal in this series we subjected to a pressure of 100 mm. and injected 20 c.c. and it died in five minutes from the time of beginning the injection. By the time the last of the fluid was in, the animal was dead. At necropsy we found that the lungs were perfectly black. They evidently had been filled completely with the collargol. The collargol filled every capillary of the lung as if injected for histologic purposes. The liver showed nodules, with quantities of collargol in the form of

infarct deposits. It was evident that when the collargol was injected it went up through and between the tubules and broke into the veins. We had to make almost a hundred sections before we could get one which showed the collargol breaking into the veins. In one specimen, with 20 per cent. collargol solution injected under considerable pressure, the collargol was shown actually breaking into a vein. The other high-pressure series showed that the animals which lived longer than a few minutes or half an hour had all the pulmonary symptoms and hemorrhages corresponding to the human cases from hemorrhagic infarcts or pneumonia. I believe that the dangers lie entirely with the use of high pressure and the combination of the mechanical and toxic actions of the silver.

Dr. Arthur E. Hertzler, Kansas City, Mo.: The great toxicity of silver is just beginning to be recognized. Twelve years ago I published a paper on this subject. Silver is very active in solution of 1:10,000. The manner in which it works is a matter of much controversy. It used to be said that a silver albuminate is not produced. It is astonishing how small an amount of carbon will produce a large amount of black substance. A single c.c. in a large-sized rabbit will stain a whole peritoneum and cause death. The capacity of the epithelium to prevent absorption is lost and the silver continues further down. The question is, How does the silver get to most parts of the body? I have made a large number of sections of all the organs of the body and sometimes found in the connective tissue bits of silver deposit. It looks as though the silver got there in solution. Yet from the general action of silver this seems impossible. When silver breaks into a vessel it attacks the leukocytes and these leukocytes travel to the distant organs. The question is, What kills the animals? Nowhere do deposits of silver seem to be enough for this.

Dr. John G. Clark, Philadelphia: This clinical method like many others, is open to criticism if it is done badly, but, after all, does not the same criticism apply to many valuable methods in vogue in other branches of medicine? If pyelography is practiced under such careful restrictions as are laid down by Drs. Keene and Pancoast, it can only be of great benefit and in no instance have I seen a single untoward result. In one case in which the ureter had been catheterized by Dr. Keene there was acute pain followed by a slight rise of temperature. I was under the impression at the time that a collargol injection had been made and was inclined to criticise the method. I found, however, that only a simple catheterization had been done and there could therefore be no reflection on this valuable method which we are discussing. Subsequently, this same patient had a collargol injection and not the slightest reaction followed it. In gynecologic work, as was shown in a paper which Dr. Keene and I published last year, irritability of the bladder is a very common symptom; so common, indeed, that many times it is accepted without question as coming from some pelvic disability. Oftentimes a gynecologic operation is done which is not followed by relief and the patient is looked on as a neurasthenic. In many of these cases, a cystoscopic examination with a pyelographic study clears up the doubt at once and locates the difficulty either in the ureter or the kidney. A large number of such cases have come under our care and I have the very highest regard for this work and feel that it has a most important place in our diagnostic methods. Even if we assume there is occasional danger, the method is so valuable in the aggregate that I do not feel it should be discarded. It it is carried out with the care which Dr. Keene always observes in his work there is no danger. I have been delighted to hear the favorable trend of the discussion. This line of investigation typifies the accurate methods in many other branches of medicine, but only those who possess special skill should have charge of this class of cases. Even though the surgeon may be ever so skilful, he may not have the requisite training to arrive at proper conclusions if he attempts to apply this method himself, and, therefore, such cases should always be referred to men who through constant practice are especially skilled.

Dr. Henry K. Pancoast, Philadelphia: Most of the remarks we have heard have been made from the point of view of the cystoscopist, and it might be well to say something from the roentgenologist's point of view. Three things are essential for correct diagnosis by this method: (1) injection by one who thoroughly understands his work; (2) the making of the roentgenographic record; (3) correct interpretation of the findings. The roentgenologist is sometimes placed in an embarrassing position, as was recalled by Dr. Braasch's remark that the use of this method should be restricted to a few men. I feel thankful in having to do such work only in a hospital where the examinations are restricted to the services of men like Dr. Keene who know how to use the cystoscope and catheter. On one or two occasions I have seen some very poor work of this kind done. In his own office, at least, the roentgenologist should feel no hesitancy in refusing to examine cases for men who do not fully understand their part of the work.

A REPORT OF TWENTY-SEVEN UNILATERAL EXCLUSIONS OF THE PYLORIC REGION

WITH SPECIAL REFERENCE TO OPERATIVE TECHNIC *

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It has been seven years since my first complete unilateral exclusion of the pyloric region was done by cutting tranversely across the stomach and closing the resulting ends blind. It seemed the only logical course of procedure when confronted by an enormous gastric ulcer situated a few centimeters from the pylorus and so extensively connected with the pancreas as to make resection seem inadvisable. The method proved itself valuable in several trials and naturally inspired an interest in its history. Doyen[1] was found to have been the first to record its performance in 1892, while von Eiselsberg[2] reported two operations in 1895 without making mention of the French surgeon's work. For more than a decade following this time, the idea seems to have received little or no further attention until the present wave of enthusiasm for it started a very few years ago. In the accompanying table are reported my first fifteen cases in which the above-mentioned technic was used.

While the anatomic status obtained by complete transverse division of the stomach left nothing to be desired in fifteen cases, still I could not escape the impression that I had thereby added a very definite risk of shock, hemorrhage and sepsis to the risk attending the gastro-enterostomy as such. It was about this time that a surgical complication which befell one of our ulcer cases demonstrated the possibility of *functional* exclusion of the pyloric region acting as at least a temporary substitute for the anatomic variety. It came about in this way.

Dec. 23, 1912, we resected most of the minor curvature in removing a large callous ulcer, thereby cutting the stomach more than half way in two. Careful transverse closure of the visceral wound was made, causing the pylorus to approach the cardia in the usual manner, without the lumen being encroached on; still a com-

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

1. Doyen: Französicher Chiro Kongress, 1893.
2. Von Eiselsberg: Arch. f. klin. Chir., 1895, L.

plete picture of obstruction ensued, persisted six days until a gastro-enterostomy was made, after which the patient speedily recovered. Dr. Soper screened this patient two and one-half months later, finding most of the food passing out through the gastro-enterostomy. (Dr. W. J. Mayo tells me he has had the same experience so often that he now considers immediate gastro-enterostomy indicated after every extensive resection in the minor curvature.)

The suggestion derived from this experience was too obvious to be ignored by one interested in exclusion. It was but natural in the next case to attempt functional exclusion by cutting partly across the stomach (Fig. 1), while at the same time a partial septum (Figs. 2, 3 and 4) was created during the visceral suture, this being the easier method of repair.

REPORT OF FIFTEEN CASES IN WHICH THE FORM OF EXCLUSION WAS TRANSVERSE DIVISION OF STOMACH AND BLIND CLOSURE OF RESULTING ENDS

No.	Name	Location of Ulcer	Present Condition	Time Elapsed
1	Mr. A. L.	One inch below pylorus on upper concavity of duodenum	Died of perforating duodenal ulcer	5 mos.
2	Mr. T. J.	On lower curvature of duodenum 1 inch below pylorus	Died of carcinoma around the duodenal and artificial openings	6 mos., 15 days
3	Miss T. R.	In duodenum below pylorus	Has gained 26 lbs. and is improving	11 mos.
4	Mrs. L. S.	High portion of duodenum	Is greatly improved	1 year
5	Mrs. F. S.	Minor curvature of stomach close to pylorus	Became insane and died	1 yr., 3 mos., 12 days
6	Miss M. L.	Minor curvature of stomach attached to under surface of liver	Died	1 yr., 7 mos.
7	Mrs. A. A.	Highest portion of duodenum	Is in the best of health	2 yrs., 7 mos., 8 days
8	Mr. D. B.	Just behind pylorus	Has gained 13 lbs. Digestion fine	1 yrs., 4 mos., 5 days
9	Miss M. P.	At pylorus	Has gained 13 lbs. Is entirely cured	3 yrs., 5 mos., 15 days
10	Mrs. R. K.	On lesser curvature near pylorus	No improvement	4 years
11	Mr. J. C.	Lesser curvature at pylorus running down to duodenum	In perfect health	4 years
12	Mr. J. L. B.	.....	In splendid health since operation	2 yrs., 8 mos., 19 days
13	Mrs. M. Mc.	Two scars at pylorus	No trouble with stomach since operation	5 yrs., 1 mo., 12 days
14	Mr. J. B.	In duodenum 1 inch below pylorus	Has gained 30 lbs. In excellent health	5 yrs., 3 mos., 4 days
15	Mr. J. P.	In lesser curvature 1 inch from the pylorus	Unable to trace patient	

The incision was made into the major curvature since animal experimentation[3] showed it much better suited than the minor curvature to such treatment. A critical study of these dog stomachs with Roentgen ray, before and after death, showed a high degree of obstruction, while the septa obtained were in every instance much more nearly complete than one could have expected to result from the operation performed. The next three patients were operated on by this method.

CASE 16.—*History.*—March 31, 1913. Mr. E. A. B., aged 58. Weight 140; always loses a few pounds at this season. For eight years has had pain in stomach coming irregularly after eating and stomach felt distended. Worse in past two years and coming also at night. Lately had attack resembling an obstruction. Good appetite, eats regular substantial food. Is bloated, belches any time and is relieved. Pains come suddenly any time and localize in epigastrium. Is nauseated and takes medicine or induces vomiting to relieve pain. Has a sense of fulness and weight but rests on either side. Bowels are constipated, has been taking aperient for past few months, stools formed, gas easily passed.

Operation.—April 7, 1913, a greatly distended gall-bladder was exposed, the lower end of which together with the cystic duct, pyloric and duodenal regions was buried in fibrous adhesions. Just below the pylorus was a large indurated area in the posterior wall of the duodenum which was plastered to a mass in the head of the pancreas, the stomach being dilated and displaced downward. Posterior gastro-enterostomy and exclusion of the pyloric antrum. The gall-bladder was brought up to the skin and fastened to be opened later.

June, 1914: Feels better than he has for past ten years. No pain or vomiting.

CASE 17.—*History.*—Nov. 28, 1913. Mrs. F. C. D., aged 38. Is losing weight and strength. Since 1912 has had attacks of pain and vomiting after eating relieved by vomiting or gastric lavage. Six weeks ago was in bed for ten days. Stomach strapped up ten weeks ago gave relief for ten days. Can retain solids longer than liquids. Appetite poor, has pyrosis, pain in side and heaviness in stomach relieved by vomiting and lavage.

Gastric Analysis: Free hydrochloric acidity 23, total acidity 61. No occult blood.

Bowels: Progressively constipated.

Physical Examination: Stomach ptotic, kidneys easily palpable and low. Abdominal wall flaccid and loose. Abdomen sore to pressure, more so in the right upper quadrant.

Operation.—Dec. 3, 1913. We were unable to deliver the pyloric portion of the stomach or duodenum, which were completely surrounded by adhesions. The stomach was dilated and low. A posterior gastro-enterostomy was done and the pyloric one-fifth excluded.

June, 1914: Gained 23 pounds since operation. Is greatly benefited but has some pain although it is more neuralgic she thinks.

CASE 18.—*History.*—June 4, 1914. Miss M. B., aged 24. About fifteen months ago trouble began with violent pain in stomach, of short duration; had several about every four weeks. Discomfort after eating. Typhoid in September, went to work in November. Stomach O. K. till three months ago. Suffers all the time when at work; better if resting. Appetite not very good, belches right after eating and has a little regurgitation of bitter acid. The pains start high to right midline about one-half to one hour after eating. The gnawing pain begins gradually and passes off suddenly. Food relieves and although there is much nausea only occasional vomiting of small amounts one-half hour after meals. Bowels, regular.

Physical Examination: Muscles rigid, tender to the right of midline.

Operation.—June 8, 1914, an ulcer was found on the upper curvature of the duodenum 0.5 cm. from the pyloric vein, about the size of a dime, marked by stellate veins and a projection of it extended down across the viscus. A posterior gastro-enterostomy was done, also an exclusion of the pyloric region made.

The foregoing three patients, operated on by cutting into the greater curvature and inverting a septum, made uneventful recoveries. One was so treated only seventeen days ago. A second is free from stomach symptoms at the expiration of fourteen and one-half months, while the third is greatly improved some seven months after operation. The method is surely simpler, cleaner, attended with less bleeding and safer than complete transverse division; still it leaves much to be desired, as far as technic is concerned.

Experience, both clinical and experimental, has demonstrated the desirability of keeping away from both curvatures if a perfectly bloodless operation is to be done. A large series of dogs have been operated

3. Bartlett: Am. Jour. Med. Sc., 1914.

on[3] in an attempt to build a septum, just proximal to the pyloric antrum, half way across the stomach, leaving a quarter free at the minor and at the major curvatures.

This has succeeded beyond our expectations as far as technic, safety and anatomic result are concerned; hence the method was used on the following seven patients. (The technic varied somewhat in different instances; for the sake of simplicity, however, only the one which we regard as standard is given (Figs. 5, 6, 7, 8 and 9):

Case 19.—*History.*—May 29, 1913. Mr. J. T. W., aged 53. He is very anemic and has lost weight in the past month. Blood-pressure 100. Has had indigestion for years, which is worse in spring and fall. For some weeks he has been vomiting and three weeks ago began to have violent cramps. He has vomited all food, has much constipation and been confined to bed.

Gastro-Intestinal: He has a poor appetite and the pains begin suddenly any time in the upper abdomen and localize in the stomach. These pains are accompanied by nausea and vomiting. Food does not seem to have any influence; vomiting and morphin relieve.

Physical: General condition and nutrition are bad. The muscles are rigid, and in the gall-bladder region is a small tender mass.

Operation.—May 30, 1913, the stomach was found low and dilated, the pyloric region being involved in a mass of adhesions to the anterior abdominal wall. The pancreas was large and hard. The gall-bladder could not be found. A posterior gastro-enterostomy was done and the pyloric one-sixth of the stomach excluded by the skewer method.

June 1, 1913: Patient in a very serious condition. Blood-pressure has dropped below 70. Blood transfusion raises pressure to 100.

June 3, 1913: Patient died of subphrenic abscess which had existed three weeks before operation, that is, chronic perforation.

Case 20.—*History.*—Sept. 17, 1913. Mr. J. P., aged 32. Began five years ago with sudden pain in upper abdomen and vomiting, lasting four or five days. Could not eat during attacks. Then followed a period of good health. From four to five months later had similar attack and several others at shorter intervals. Stools black. Blood in vomitus of last attack.

Good appetite, belches after alcoholics, pains start suddenly in epigastrium, radiate to both lumbar regions and localize in the epigastrium. These are accompanied by fever, nausea and projectile vomiting of water, bile, mucus, coffee, etc., from three to four stools daily, formed with blood and mucus.

Physical: Well-nourished but anemic, breath sour, teeth poor, heavy brown coat on tongue. Tenderness in mid epigastrium, examination otherwise normal except a right inguinal hernia.

Operation.—Sept. 17, 1914, we found in the lesser curvature, not far from the pylorus, a round indurated area the size of a half dollar fixed in position by a close firm adhesion to the head of the pancreas. There were old adhesions between the liver, pyloric antrum and pancreas. Exclusion of the pyloric one-fourth of the stomach by the skewer method and a posterior suture gastro-enterostomy were done.

June, 1914: Gained 35 pounds. Feels splendid.

Case 21.—*History.*—Oct. 24, 1913. Mr. H. P. M., aged 39. Weight, 110 pounds. Smokes to excess, causing cough and shortness of breath. Began sixteen years ago with burning pain around umbilicus, coming on about three hours after eating and lasting until vomiting or opiate gave relief. There were two periods when he was entirely free from pain, in 1911 and last March lasting few weeks. The attacks are becoming more frequent.

Has lost ten pounds in nine months. His appetite is variable. Has had irregular pyrosis for past nine months. Is bloated and has a feeling of fulness. The pains start suddenly in the epigastrium about three and one-half hours after eating and pass off suddenly. The influence of food is variable. Induced vomiting from three to four hours after eating gives relief. Rests best on the left side.

Bowels regular. Occult blood, positive.

Roentgenoscopy shows deep peristaltic waves with the antrum well filled. Position moderately low.

Wassermann: Faintly positive.

Operation.—Nov. 5, 1913, we removed a very long appendix which was completely retroperitoneal and tied down in the right fossa. The pylorus, anteriorally, showed a thick white scar about the size of a dime which firm adhesions an inch in length connected to the under surface of the liver. The gall-bladder contained nothing, so a posterior gastro-enterostomy was done and the pyloric one-fourth was excluded.

June, 1914: Gained 13 pounds. Feels perfectly well.

Case 22.—*History.*—Nov. 19, 1913. Miss V. R., aged 34. Was never strong, lost 30 pounds in past year. Has headache, roaring in ears and a tickling cough. Eight months ago, began to have soreness and heaviness in upper abdomen, worse at once after eating but also present on empty stomach. No acute attacks, no fever or vomiting. Progressive weakness and anorexia. Weight, 120 pounds.

Appetite poor for nine months. Has pyrosis one-half hour after eating which lasts only a few minutes, is relieved by belching and has slight regurgitation of bitter acid. The pains begin slowly any time in the upper abdomen and liver region which at times radiate deep in the back and never entirely disappear.

Bowels: Constipated; no occult blood.

Operation.—Nov. 21, 1913, the gall-bladder and duodenum were found tightly adherent together, the former being attached to the anterior abdominal wall. The stomach was large, the pylorus wide open; nothing could be seen of an ulcer, but on account of stomach specialist's positive statement, we did an exclusion of the pyloric one-fourth and a posterior gastro-enterostomy.

Ten days after operation, stomach contents appeared in the abdominal wound and she died of exhaustion forty-one days later, after an attempt to repair the damage.

Necropsy.—Jan. 10, 1914: Partition extending almost entirely across the axis of the stomach cavity at the right angles to it and dividing the viscus into two pouches, the pyloric one being one-sixth as large as the other. At the minor curvature the tip of one finger can be introduced into a communication between the two pouches. The septum is lined with intact mucous membrane and there are no adhesions to the exterior of the stomach. There is necrosis at the point of the gastro-enterostomy; through this the contents leak into the wound and peritoneal cavity, giving rise to a purulent peritonitis.

Case 23.—*History.*—March 27, 1914. Miss A. B., aged 23. Fair appetite, eats only light diet, pyrosis after meals lasting one-half hour. She is bloated, feels full, belches after meals without relief. Has continuous dull ache which begins gradually at the right costal margin, localizes in the gall-bladder region, is worse after eating. She is nauseated and vomits spontaneously; food taken especially after the evening meal and vomiting relieve her.

Gastric Analysis: Free hydrochloric acid 40, total acidity 60. Occult blood, positive. Bowels constipated, occult blood positive.

January 16: Appendix removed without relief of symptoms.

Physical Examination: Right side rigid, stomach dilated, gall-bladder region suspicious.

Roentgenoscopy: Hyperperistalsis of stomach marked. Barium remains in stomach after six and one-half hours. The stomach is long and sags with no barium going through pylorus. Transverse colon ptotic.

Operation.—April 7, 1914: Stomach and duodenum dilated. Pylorus wide open. There was a peritoneal band extending from the minor curvature of the pylorus down and to the right. At the insertion of this band there was thickened area, the size of a nickel, on the posterior wall of the duodenum very near the pylorus; hence we did a posterior gastro-enterostomy as well as an exclusion.

June, 1914: Gaining in weight and improving steadily.

CASE 24.—*History.*—April 14, 1914. Mr. F. R., aged 23, has lost 19 pounds in thirty-six months, is nervous and does not sleep well. Weight 127 pounds.

Has had constipation for seven or eight years which began with pain low in mid abdomen; none last three years. No natural movement and must have one daily or has great discomfort from gas, etc. Appetite is fair, belches after meals. He is bloated, feels full, has regurgitation at times. Has bad pain below umbilicus which begins and passes off slowly. Food has no influence. Has nausea.

Gastric Analysis: Free hydrochloric acid 70, total acidity 92; occult blood and mucus present.

Roentgenoscopy: Ill-marked pyloric antrum, pylorus wide open, stomach normal in position and size. Empties in one hour, colon distended with bismuth and normal position.

Operation.—April 24, 1914, we exposed a stomach of moderate size considerably thickened and with a tight pylorus. The peritoneum was injected. From a point just below the pylorus on the minor curvature, there was a scar extending up to under surface of the liver and inside the duodenum; at this point was an area the size of a dime so thickened that it felt like cartilage; on the minor curvature, near the pylorus were a number of hard glands varying in size from a pea to a hazelnut. We did an exclusion of the pyloric antrum and a posterior suture gastro-enterostomy.

June, 1914. Steadily improving.

One patient died four days after operation from exhaustion consequent on a long-standing subphrenic abscess. Another died fifty-one days after operation from what may have been a perforated jejunal ulcer. In both instances the septum was almost complete (there being a small mucosa lined canal at either curvature) with no evidence of any complication about it. Of the five who are alive, two are known, as result of fluoroscopic examination, to be completely obstructed seven months and two months, respectively, after operation. Of the five last mentioned, one was operated on only twenty days ago, another is greatly improved at the expiration of two months and eight days, while the other three are free from stomach symptoms at nine months, seven months and two months, respectively. There is no denying the theoretical objection that mucosa is interposed between layers which are expected to heal together; still I have used it on fifteen dogs[3] and seven human subjects without a leak developing.

Two patients made rapid and satisfactory recoveries after exclusion by a strip of fascia after the Wilms method; it is, however, too early to draw conclusions. One of them is improved at the expiration of two and one-half months, while the other is free of stomach symptoms for the first time in years, twenty-four days after his operation. Details are omitted since there was nothing original about them.

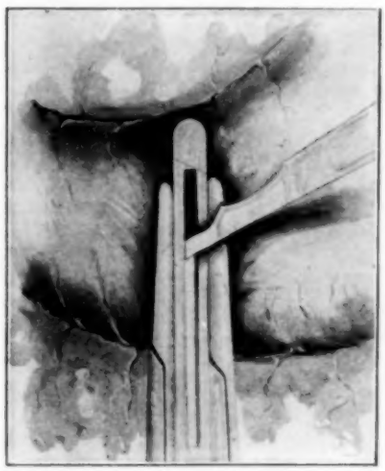

Fig. 1.—Just proximal to the pyloric antrum, an incision is made from the greater curvature two-thirds the way across the stomach through a slit clamp, on either side of which is a crushing-clamp.

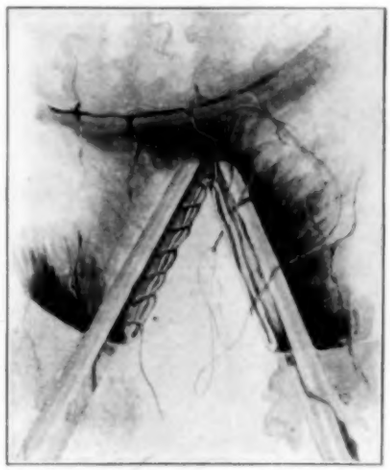

Fig. 2.—The crushing-clamps are separated far enough to permit the introduction of a buttonhole stitch through all the layers.

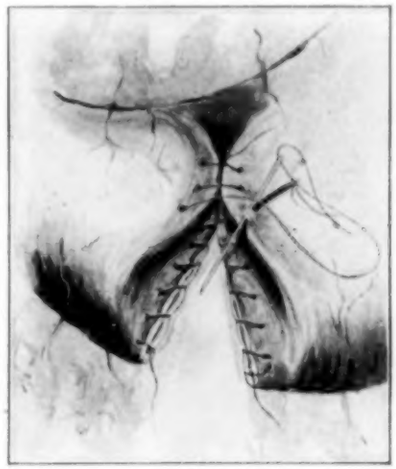

Fig. 3.—The first row is hidden and the V closed by a Lembert row, which runs down the anterior and up the posterior walls.

CASE 25.—*History.*—June 1, 1914. S. L., aged 38. Very poor health, has been losing weight and now weighs 115 pounds. Has frontal headaches. Never strong. Fell ten years ago, some abdominal trouble since. Backache and stomach trouble, feels as if eating would help. Four years ago bleeding piles appeared, free of them about three years.

Gastro-Intestinal: Appetite fair at times, pyrosis after meals sometimes lasts several hours, has choking sensations, belches bitter acid which gives some relief. Sharp, cutting pains localize in the epigastrium and passes off gradually. Nothing relieves, food influence varies. Bowels constipated Bleeding hemorrhoids very troublesome.

Physical: Right abdomen full, narrow costal angle, tender below umbilicus, tone of muscles increased.

Operation.—June 5, 1914: There was a spastic closure of the pylorus and a duodenal ulcer on the lower curvature posteriorly very close to the pyloric ring. A posterior gastro-enterostomy was done after which the pyloric antrum was excluded.

This method of making a septum has seemed in these seven experiences to be easier, cleaner and drier than any other cutting procedure known to me. In no instance has a leak occurred at the site of obstruction.

Ligation of the pylorus with a strip of fascia as devised by Wilms is a simple procedure on the normal dog. I found it, however, anything but easy to apply on one human subject. There was much thickening of the tissues behind the pylorus so that it was only with great difficulty that a forceps could be introduced. A large blood vessel was ruptured by the instrument, to say nothing of time lost and difficulty encountered in ligating the same. It is much easier to exclude the pyloric antrum than to ligate the pylorus with fascia. Further considerations of importance are difficult wound closure if the fascia comes from an edge of the laparotomy incision, or the making and closing of a second incision if fascia lata be used.

My animal experimentation, tending to show whether or not obstruction produced in this manner be permanent, is still incomplete.

The exception taken to the exclusion method of Doyen[1] and von Eiselsberg,[2] tried out by Haberer,[4] Jonnesco,[5] Jianu,[6] Girard,[7] Leriche,[7] Bressot,[7] Grossman,[7] and Küttner,[8] is the difficulty of execution and the increased percentage of mortality.

Kolb,[9] Bircher,[10] Hercher,[11] Hoffmann,[12] and Göbell[13] have tried out the Wilms[14] method with the strip of living tissue, and Naselli,[15] using various tissues in six experiments, found the closure only temporary.

Brewer[16] excluded the pylorus in nine dog experiments with an aluminum strip, finding the lumen nonpatent at necropsy not later than two months and ten days.

Berg,[17] Pool,[18] Momburg,[19] Corner,[20] Renton,[21] Ward[22] and Parlavecchia[23] have used a non-elastic ligature to occlude the pylorus, and report good results; but the large majority of men who have experimented with this method find that the ligatures rapidly cut through into the lumen and are passed along with the intestinal contents.

Infolding or kinking methods as practiced by Blad,[24] Mertens,[25] Sequinot[26] and Mariani[27] give only a temporary occlusion of the pylorus.

up the pylorus, thus permitting the lesion to heal while allowing the pylorus to become permeable after all danger of irritation of the ulcer is past.

I have seen W. J. Mayo and Mr. Moynihan infold with a purse-string, ulcers of the duodenum. Both seemed of the opinion that in this way temporary obstruction was produced and the value of the gastro-enterostomy enhanced. No theoretical deduction can be lightly weighed in the balance against any statement based on the practical results of two surgeons whose experience has been so rich and whose powers of logical deduction have proved so valuable.

A study of the intricate physiologic arrangement which exists for taking care of the acid stomach contents inclines one to preserve the same in the absence of weighty reasons to the contrary.

Apparently the stomach contents are sharply divided for a long time into two parts. Unacidified salivary digestion may go on two hours in the cardiac half according to Pawlow.[28]

The anatomic ground for this was suggested by Klemensiewicz,[29] who was the first to attempt isolation of the pyloric and fundus pouches, to get two pure secretions. In 1875 he excluded (bilaterally) a

Fig. 4.—The step here described may be used instead of that shown in Figure 3. Here the first row of sutures described in Figure 2 is inverted in the ordinary manner, the V being left open.

Fig. 5.—A spatula is thrust behind the stomach from below upper and a skewer driven through both walls of the viscus and out again, in such a way that it holds up about half of it when measured transversely. The highly vascular portion of the stomach is not interfered with.

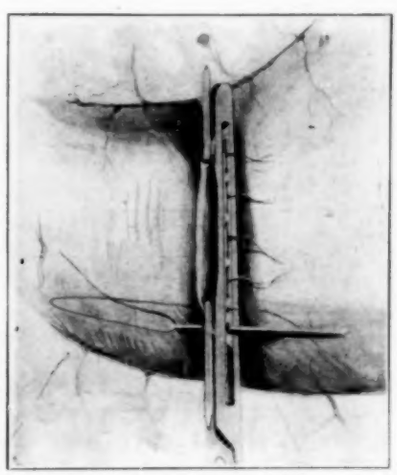

Fig. 6.—A slit clamp is applied behind the skewer and several mattress-sutures introduced through all the layers of the anterior and of the posterior walls.

Not a few workers in this field seem to be convinced that the best technic is that which temporarily closes pylorus sack in the dog and withdrew an alkaline secretion. He kept no dog more than seventy-two hours. Heidenheim[30] kept one of six operated on thus for six months and got the same alkaline fluid with pepsin and rennin. He[31] found that pyloric secretion had no effect on the wall about the fistula. Not satisfied with this knowledge, he[32] isolated a fundus sack in eight dogs, kept one several weeks and withdrew a secretion containing pepsin and hydrochloric acid of higher concentration than the normal from a whole stomach (mixed with saliva and alkaline pyloric juice). It digested the tissues about his fistula.

Sick[33] withdrew through the tube, separately, the contents from fundus and pyloric portions. He found the two samples (in healthy stomachs) to be quite

4. Haberer: Arch. f. klin. Chir., 1913, c, No. 1.
5. Jonnesco: Revue. de Chir., 1907.
6. Jianu: Wien. klin. Wchnschr., 1910, xxiii, 1223. Girard: Verhandl. d. Deutsch. Gesellsch. f. Chir., Berlin, 1911, xl, 268. Leriche and Bressot: Lyon Chir., October, 1911. Leriche: Lyon Chir., 1913. Jianu and Grossman: Arch. f. Verdauungskr., April, 1910, xvi, 147.
7. See Footnote 6.
8. Küttner: Deutsch. chir. Kongr., 1913.
9. Kolb: Deutsch chir. Kongr., 1913.
10. Bircher: Zentralbl. f. Chir., October, 1913, No. 40, p. 1547.
11. Hercher: Zentralbl. f. Chir., November, 1913, No. 44, p. 1707.
12. Hoffmann: Zentralbl. f. Chir., August, 1913, No. 40, p. 1331.
13. Göbell: Zentralbl. f. Chir., August, 1913, No. 40, p. 1332.
14. Wilms: Deutsch. med. Wchnschr., 1912, xxxviii, 101.
15. Naselli: La Clinica Chirurgica, May, 1913.
16. Brewer: Surg., Gynec. and Obst., 1914, xviii, 145.
17. Berg, A. A.: The Influence of Gastro-Enterostomy on Gastric and Duodenal Ulcers, THE JOURNAL A. M. A., March 22, 1913, p. 881.
18. Pool: Ann. Surg., 1913, lviii, 663.
19. Momburg: Zentralbl. f. Chir., 1913, No. 42.
20. Corner: Lancet, London, 1913.
21. Renton: Brit. Med. Jour., April, 1912.
22. Ward: Lancet, London, July 7, 1906.
23. Parlavecchia: Policlinico, Rome, April, 1910, xvii.
24. Blad: Ugesk. f. Laeger, 1912, xxv.
25. Mertens: Zentralbl. f. Chir., 1913, No. 40, p. 1545.
26. Sequinot: Thèse de Paris, January, 1913.
27. Mariani: Zentralbl. f. Chir., 1913, No. 44, p. 1706.
28. Pawlow: The Work of the Digestive Glands, London, 1910.
29. Klemensiewicz: Sitzgsber. d. Wiener acad., March 18, 1875.
30. Heidenheim: Arch. f. d. ges. Physiol. (Pflüger's) viii, 169.
31. Heidenheim: Hermann's Handbuch der Physiologie, Leipsic, 1881.
32. Heidenheim: Arch. f. d. ges. Physiol. (Pflüger's), xix, 148.
33. Sick: Deutsch. Arch. f. klin. Med., lxxxviii, 169.

different, physically and chemically. He got no or little hydrochloric acid from the pyloric portion, but obtained pepsin and rennin from it, though perhaps not so much as from the fundus.

In view of this knowledge, we must consider the pyloric antrum (as far as its secretion is concerned) as part of the intestine. Now many unfortunate experiences have proved that secondary jejunal ulcers are commoner, the lower, stomach contents are dumped into the bowel by gastro-enterostomy. In other words, the farther we go from the mucosa, in which acid secretion originates, the less automatic protection we find against its immediate effects.

We find far the greater part of all ulcers in the pyloric antrum and upper duodenum, regions which produce no acid, but which are regularly and frequently exposed to its action.

Cohnheim,[34] using from 6 to 8 cm. water, finds steady pressure on the contents of the fundus, while in the pyloric antrum, regular, powerful, peristaltic waves run along at regular intervals (six to the minute) according to Cannon[35] toward the pylorus and inject the food far into the duodenum.

Pawlow[28] agrees with Cannon[35] that it is the acid in the duodenum which causes the pylorus to close and the gradual alkalinization of the duodenal contents to a given point which causes this sphincter to open again. One must, in view of such reasoning, hesitate *especially in the presence of high acidity* before permanently dumping stomach contents onto a mucous surface ill-prepared to receive the same.

2. Closure of the pylorus itself cannot protect a gastric ulcer proximal to it, even in the presence of gastro-enterostomy, since the pyloric antrum drives stomach contents as far as possible toward the closed pylorus before letting it fall into the new opening. *Gastro-enterostomy alone* seems to have done less good the farther from the pylorus a stomach lesion has been found. However, my experience with unilateral exclusion of the affected area in such cases has been most satisfactory.

It takes the place of excision of gastric ulcer, or pylorectomy where the latter presents extreme technical difficulties.

A large ulcer perforating deeply into the structure of the pancreas, liver or other organs is most simply treated by exclusion.

It prevents the gastric contents passing over an ulcer; stops pain, prevents hemorrhage and puts the excluded portion at rest, allowing the ulcer to heal, thus decreasing the likelihood of secondary cancer.

3. Any form of exclusion of the pyloric antrum which prevents food passing over it accomplishes as much as does complete transverse division of the organ. Cohnheim teaches that the innervation of the stomach and pyloric musculatures is chiefly governed by automatic centers in the organ. This much is known although the exact action of the stomach's nerve mechanism is not understood. We cannot hope to stop secretion in the pyloric antrum by complete transverse division of the organ since Pawlow has shown that foods stimulate gastric secretion after the stomach is completely isolated from nerve connections, and hence through intrinsic ganglion by reflex nervous origin.

Fig. 7.—The skewer is cut out and the edges cauterized to avoid hemorrhage.

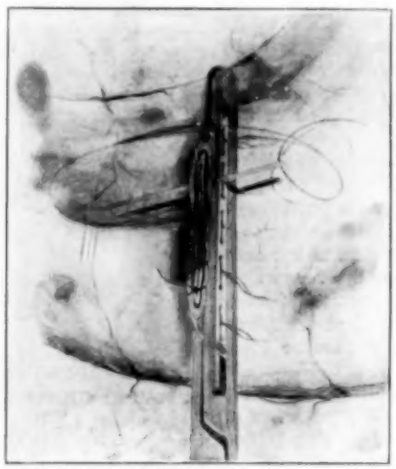

Fig. 8.—A hemostatic buttonhole stitch is introduced through all four layers.

Fig. 9.—The cut surfaces are hidden by a row of Lembert sutures.

CONCLUSIONS

1. Our real knowledge of ulcer is so meager at present that we are not prepared to deal with remedial conditions which do more than temporarily relieve the anatomic condition which is the expression rather than the origin of this disease. In the duodenum infolding (temporary obstruction) and gastro-enterostomy accomplish this without forever diverting stomach contents to a mucosa ill prepared to receive it. This is shown by a study of the enormous material of the Mayos and Moynihan.

4. Both the methods I am proposing are simpler, take less time and encounter fewer blood-vessels than does transverse complete division of the organ. Experimentally they produced results similar to it, while clinically they seem to have been equally successful.

5. My first method (Figs. 1 to 4, inclusive) may seem the more convincing on theoretical grounds. The second (Figs. 5 to 9, inclusive) is the easier to perform and is less bloody, but it violates the time-honored principle that mucous surfaces are not to be approximated. The two methods seem to have given

34. Cohnheim, Nagel: Handbuch der Physiologie, Braunschweig, Ger. 1905-1909, Vol. II.
35. Cannon: Mechanical Factors of Digestion, London and New York, 1911.

equally good results in experimental work; the same seems to be the case in my clinical work, although this is not so easily ascertained. I leave the reader to choose between the two, after trying them.

400 Metropolitan Building.

ABSTRACT OF DISCUSSION

DR. WILLIAM L. RODMAN, Philadelphia: So many methods have been proposed from time to time to exclude the pylorus that we must agree that it is questionable if they do exclude. We know that the early methods which were introduced were absolute failures. Practically all methods except within recent years were looked on as failures, beneficial only for a time. So von Eiselsberg devised the radical procedure of cutting across the pylorus, sewing up the pyloric and the duodenal ends, thus making the two openings in the gastro-intestinal tract to close. I am satisfied that the method described by Dr. Bartlett is excellent and, moreover, less mortality would follow his method than that of many others, and yet, he has had two deaths. The cases are too few, the time too short to say what the ultimate results will be, but I am inclined to agree with him that when the stomach is bound down by adhesions and a resection cannot be done, it would, perhaps, be well to use his second method. There would, I think, be less mortality than after the first. I have never performed pyloric exclusion, but if I do, shall use Dr. Bartlett's method, as it appears quicker, safer and seems to accomplish all that is accomplished by von Eiselsberg's operation. The question arises, Why operate, when, by removing a little more tissue than is removed in von Eiselsberg's operation, the ulcer-bearing area may be excluded. Dr. Bartlett's operation or any method of exclusion cannot prevent subsequent hemorrhage perforation or cancer of the stomach. There are, annually, 75,000 deaths in the United States from cancer, and more than 25,000 of them are from cancer of the stomach. Why shall we leave a lesion with so great potentialities in the stomach if it can be removed with practically the same mortality as these other methods, ingenious in a way, but which do not go to the root of the trouble? It has simply been from an exaggerated fear of the mortality. Is that justified? Recently, before the American Surgical Association, I reported a large number (375) of pylorectomies and partial gastrectomies done by American surgeons with a mortality of 4 per cent. I do not think one can do the von Eiselsberg operation with a smaller mortality and yet, in that operation, you are leaving the lesion behind. The fact stated by that great pathologist, Virchow, must be constantly kept before the mind, that 35 per cent. of all cancers in the human body are in the stomach. The time to operate on cancer of the stomach is when it is an ulcer. It has been conclusively shown that a vast preponderance of gastric carcinomas are preceded by ulcers. All precancerous lesions should be attacked radically, for in this way only shall we be doing our full duty.

DR. W. D. HAGGARD, Nashville: I have not applied Dr. Bartlett's procedure to the human subject but expect to use it in suitable cases. There have been many attempts to exclude the pylorus; the old ligature has been unsatisfactory. Dr. Bartlett's operation is simple and seems worthy of trial in some cases. I would not differ with Dr. Rodman in doing partial gastrectomy in suitable cases, but the surgeons of this country ought to reserve that for the extreme case. Now it cannot be denied that an operation of that magnitude in average hands is not going to be attended by the minimum mortality of 4 per cent. that has been gathered from the great clinics of the country. This Association is to establish certain lines of procedure for the average American surgeon. While it is true that of those cases of ulcer which develop cancer, 70-odd per cent. have developed on ulcer, it does not mean that all cases of ulcer will develop into cancer. Witness the very few cases that have ever been reported of a secondary malignant degeneration of an ulcer that has been operated on by gastro-enterostomy or any of the other well-recognized measures. Now, if, at the time of operation, you are clinically or pathologically undecided as to whether or not the case is malignant, then Rodman's operation is the operation of election. It seems to me, however, that in the average case the principles laid down by Dr. Bartlett are the ones we should apply. Any measure that has just been introduced is, of course, going to have a hard voyage, but I do believe that if we practice this operation we shall find it applicable to a large number of patients who will do better than if we perform gastro-jejunostomy.

DR. W. C. JONES, Chicago: What evidence does Dr. Bartlett have that his method produces complete pyloric obstruction? This point seems doubtful to me. I have been doing some experimental work with Dr. Carl Beck of Chicago, in making an artificial tube from the greater curvature of the stomach, using this tube for gastro-enterostomy instead of connecting the intestine with the unaltered stomach. In this work, the pyloric end of the stomach was narrowed as much or more than occurs in Dr. Bartlett's operation; yet we found by means of the Roentgen ray that the stomach contents passed largely through the pylorus. Passing a ligature around the pylorus did no good, as might have been expected. The most satisfactory and the simplest method we found of making the obstruction sure was complete incision of the pylorus and infolding of the cut ends. This procedure is very simple, is absolutely certain, and on the whole, leaves little to be desired.

DR. WILLARD BARTLETT, St. Louis: I was probably not understood when I stated that I had the stomachs from two necropsies and the stomachs of 17 or 18 dogs in evidence of the fact that the obstruction produced seems to be as complete as the operation of complete transversion with folding in of the ends. I cannot explain the difference, however, between this and Dr. Jones' method, but I shall be glad to study it.

A MICROCEPHALIC IDIOT WITH MALFORMATION OF BRAIN*

REPORT OF A CASE

ARTHUR K. PETERY, M.D.
NORRISTOWN, PA.

The case which I report is that of a patient who has aroused considerable curiosity among those who have seen him. The parents of the patient were interviewed by myself and furnished what information they could, freely and willingly. They appeared to be working people of the average intelligence, the father being 59 years of age, healthy, a blacksmith, a steady worker and a moderate user of alcoholics, though he has never been intoxicated. His mother is still living, aged 83, while his father died at the age of 62 from rheumatism. The patient's mother is living at the age of 55 and at present is passing through the menopause; she was the mother of eight children, who, with the exception of the patient, are all living and normal. She is strictly temperate in habits; her father was killed at the age of 38 in a railroad accident and her mother died at the age of 70, the result of heat exhaustion.

There is no history of any miscarriages, tuberculosis, malignancy or mental diseases in the family, and the only explanation that the mother can offer for the condition of the patient is that when she was four or five months pregnant they moved from one house to another, and she did a lot of hard work and heavy lifting, but was not injured and nothing unusual occurred.

REPORT OF CASE

Personal History.—The patient, the third child in a family of eight, was born April 17, 1884, at full term. "Birth was

* Read before the Philadelphia Psychiatric Society, March 13, 1914.

easy"; the child weighed about 6 pounds. The family noticed that the head was quite small and had "no openings on top," but thought nothing of it. The child was breast-fed to the age of 2 years when he was weaned, but it has always been necessary to feed him with a spoon. He never made any effort to learn to talk and first began to walk at the age of 3 years. He never walked a great deal, but when he did try, it was on his toes, never placing his foot flat on the ground. His condition first attracted the special attention of his parents at about the age of 5 years when they were told that the child would never talk or be of any account in the world. As soon as he was able to sit alone he would place his feet under him and when in bed would lie with the lower extremi-

Fig. 1.—Facial expression of patient in animation.

ties contracted. He constantly pounded with his hands on anything near him and the parents explain his large hands by this action. As he grew older he learned to know the various members of the family by sight; was usually good-natured, but at times showed a temper. When strangers came into the house he would notice the difference; would laugh and become noisy and excited.

It was always necessary to tie him to his chair, otherwise he would get into mischief by pulling things over and destroying them, and if the other children came within reach he would pull their hair with both hands, though he seemed to enjoy watching them playing about him. He was inclined to be destructive at every opportunity and if he found a small hole in his clothing would work at it until the garment was destroyed. He was never able to talk or to care for his personal wants.

Owing to illness in the family and a further inability on their part to care for him properly, he was taken to the Norristown State Hospital, Jan. 28, 1905; he was then 21 years of age. The records of the hospital at that time, while rather meager, state that he was an idiot and could not talk or walk, had to be fed, was unclean; quiet and did not make any sound. He weighed 65 pounds and was about 4 feet 2 inches in height. His chest was pterygoid in type, the lungs normal, the heart-action regular, but rapid; no murmurs were elicited; the pulse was rapid, but regular; the hands and feet were cold and cyanotic; he had abnormally long arms; the ears were quite large and head was small. He showed athetoid movements of the upper extremities. The muscles of the lower extremities were apparently paralyzed and showed contractures; the knee-reflexes were exaggerated and showed ankle-clonus; the pupils responded to light.

A review of his physical condition a short time before his death, Dec. 20, 1913, showed the following cranial measurements: biparietal, 12 cm.; occipitobregmatic, 13 cm.; occipitomental, 20 cm., and cranial index 923. The head was covered by a loose thick scalp. The ears were quite large; palate arch high; the arms were rather long and the hands large and coarse. The fingers were heavily calloused from being continually bitten. The musculature of the lower extremities was poorly developed and showed marked contractures; extremities were cold and cyanotic. The patient's actions were rather jerky. The chest was round with the sternum quite prominent; the left apex showed a cavity formation. The abdomen was apparently normal, while the genitalia were unusually well developed.

In appearance he resembled more closely a monkey than a human being and this led to his being called "the monk"; he might easily have been used as a specimen to carry out the Darwinian theory.

The ward notes as to his mental condition varied but little during his time in the hospital, the substance of them being that he was entirely helpless, unclean in his habits, usually dull, but at times appeared to observe what was going on about him, took no special interest in any one thing, would watch people going about and could be attracted by strange noises such as the dangling of keys, etc., when he would look toward the source of the noise. He was always more or less destructive and would tear his clothing, using both hands in doing so. Frequently would hold the cloth with one hand and tear with the other.

About April, 1913, the ward physician was able to interest several of the other inmates in this patient's condition in an effort to observe just what effect constant personal effort in the patient would bring out. These inmates devoted most of their time to him and would perform all sorts of antics for his amusement. Gradually he appeared to watch them, and would become excited, jump in his chair and laugh at their actions; at times would grunt as if in an effort to speak; he also seemed to know these particular men, for when they would approach him he would become excited, but when a stranger approached he paid no attention and hung his head.

These men would also throw a handkerchief to him and he gradually learned to watch for it, catch it and then throw it back, but without any definite direction; at times they would cover his head with it and he would pull it off and throw it at times with one hand, and again the other, and seemed to wait for them to replace it, apparently enjoying its performance. He would only do these things, however, with the persons with whom he was acquainted. Generally, he became much brighter and watched any moving object and at times would become quite noisy, and this state continued until his final breakdown and death.

Fig. 2.—Lateral view of brain.

Post-mortem Findings.—The head is covered by short thick brown hair. The scalp is thick, average 8 mm., contains much fat, and shows many transverse folds. The epicranium is thick, white and tough. The skull is hard and contains a fair proportion of diploe. It measures 5 mm. in thickness in the frontal region, 2 mm. in the parietal region, 9 mm. in the occipital region. All the sutures are indistinct, in places entirely obliterated. The dura is generally a little thick, but strips from the calvarium readily. The internal measurements of the skull, at level of section, are 10.5 cm. anteroposteriorly, and 8 cm. transversely at the parietal eminences. The anterior basal fossa measures 3 cm. anteroposteriorly, 3 cm. transversely at the widest portion, and is perfectly flat. The

middle fossa measures 5 cm. anteroposteriorly, 3 cm. transversely, 1.5 cm. in depth. The posterior basal fossa measures 3 cm. anteroposteriorly, 4 cm. transversely, and 2 cm. in depth. The pia-arachnoid is slightly opaque over the sulci, and here the subarachnoid space contains an excess of fluid. The brain is extremely small. The posterior lobes do not cover the cerebellum and the latter protrudes 1 cm. behind the occipital pole on the left side and 1.5 cm. on the right side. The cerebral hemispheres measure 9 cm. from frontal to occipital pole and 4 cm. in width. The convolutions are rounded and extremely elementary and vary considerably in width. The fissure of Sylvius is well defined. The posterior limb extends upward and backward, reaching the neighborhood of the great longitudinal fissure just behind the middle of the superior edge of cerebrum. Its course closely resembles that of the normal fissure of Rolando. There is depression at the site of the ascending limb of this fissure. A well-defined fissure lies anterior to the posterior limb of the sylvian fissure on the left side, which probably corresponds to the rolandic fissure. From this, two short fissures run at right angles, probably corresponding roughly to the upper and lower frontal fissures. The right frontal lobe is similarly marked, but less distinctly. The orbital surfaces of the frontal lobes show two short, shallow anteroposterior sulci, separating it into three convolutions. The olfactory bulb and tract are small. The trigonum olfactorium is larger and more distinctly formed than normally. The temporal lobe is rather well defined. Three horizontal fissures run roughly parallel to the sylvian fissure. The superior temporal fissure is well defined. There is a distinct supramarginal and angular gyrus. A small depression probably corresponds to the intraparietal fissure. On the mesial surface of each hemisphere, one irregular sulcus is seen, corresponding to the callosomarginal fissure, which approaches the superior edge of the hemisphere behind the position of the sylvian fissure. No distinct parieto-occipital, calcarine or parallel fissures are found, so that it is impossible to define the mesial and lower aspects of the parietal and occipital lobes. The hippocampal convolution is also poorly defined, but wide. There is one depression in the lower surface of the temporal lobe near the temporal pole. If this marks the width of the uncus, this convolution measures 1.5 cm. in width and is the widest convolution of the brain. Elsewhere the convolutions measure 0.5 to 1 cm. in width.

Fig. 3.—Looking down in hemispheres. Note absence of corpus callosum.

No corpus callosum connects the hemispheres, the pia-arachnoid of which was slightly adherent. The pia-arachnoid is reflected from one hemisphere to the other, and beneath this a thin membrane, apparently the tela choroidea, is seen. When this is incised the third ventricle is exposed. The fornix is not fused and can be seen over each thalamus, running anteriorly and downward as the descending pillars. The cortex lies close to the fornix above. No anterior horn of the lateral ventricle is apparent and the head of the caudate nucleus is not seen. At the normal position for the foramen of Monro, beneath the descending pillars of the fornix, fringes of the choroidal plexus are found, likewise on the under surface of the velum interpositum, in the midline. The thalami are seen, also the anterior, middle and posterior commissures, the region of the habenular nuclei, a small pineal body, and corpora quadragemina.

Sections of the right hemisphere show the absence of the anterior horn of the lateral ventricle. The caudate and lenticular nuclei, internal and external capsule, claustrum and optic thalamus are in normal relations. The lenticular nucleus is relatively large. The posterior and inferior horns of the lateral ventricle form one large horn extending from the level of the surface of the optic thalamus. The shelving fornix and the choroidal plexus extend downward into the temporal lobe. A distinct small cornu ammonis is present. The cerebral cortex varies from 2 to 4 mm. in width.

The cerebral peduncles and pons are small, but the whole medulla is relatively large, approaching the normal adult size. The cranial nerves appear at their normal positions and are small, except the third and fifth, which are relatively thick. The pituitary body is relatively large, and of normal size. The circle of Willis and vascular supply are normal.

The cerebellar hemispheres measure 45 cm. anteroposteriorly by 4 cm. transversely. In gross appearance, both the vermis and hemispheres are normally marked and small, but not in proportion to the cerebral hemispheres. The brain weighs 220 gm.

The preceding description is based on a comparison with the normal adult brain. The scale of development, compared to the brain of the monkey and ape has not been sufficiently studied. Dr. E. A. Spitzka states that the brain is as small and elementary in cortical development as he has seen in a human brain. He believes that it has no distinct occipital lobe and agrees that it is incallosal. The cortical development is much below that of the higher apes. A more complete comparative and pathologic study of the brain will be undertaken and reported.

For the preceding report of the necropsy I wish to express my appreciation to Dr. Charles J. Swalm, Pathologist to the State Hospital.

FUNDAMENTAL INTRAPELVIC PERINEORRHAPHY *

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Friedrich Schatz[1] in 1883, standing chiefly on the work of Luschka,[2] it appears, was the first gynecologist to point out in detail the anatomy of the female pelvic floor in general and that of the levator ani in particular, to define its functions and to describe the injuries which it receives, chiefly during parturition, in its posterior, lateral and anterior sections. He makes it clear that injury of the levator ani may occur independently of the perineum (submucous tears), but more usually with tears in the latter, and that truly intrapelvic work is needed to accomplish the best that can practically be done with them. The next most notable promotion of the subject occurred in 1889 by R. L. Dickinson,[3] who corrects some misconceptions of the anatomy and presents the results of tests of the contractile power and lifting capacity of the levator ani. The results of these tests I regard as necessarily due partly to the concurrent actions of the bulbocaver-

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

* This article has been abbreviated by the omission of some of the illustrations. The article will appear in full in the Transactions of the Section and the author's reprints.

1. Schatz, Friedrich: Arch. f. Gynäk., xxii.
2. Luschka: Das Becken.
3. Dickinson, R. L.: Am. Jour. Obst., September, 1889.

nosus muscles and inner borders of the trigon, that could not be excluded.

Next, Charles P. Noble,[4] in 1897, published a method in which he made a modified Emmet denudation and passed interrupted sutures transversely, taking in the vaginal wound edges with those of the levators beneath, with the aim to attach the latter to the former rather than to unite the levator borders. After this, in 1901, I[5] emphatically reiterated the superficial character of all the former standard perineorrhaphies and dwelt on the necessity of utilizing the more

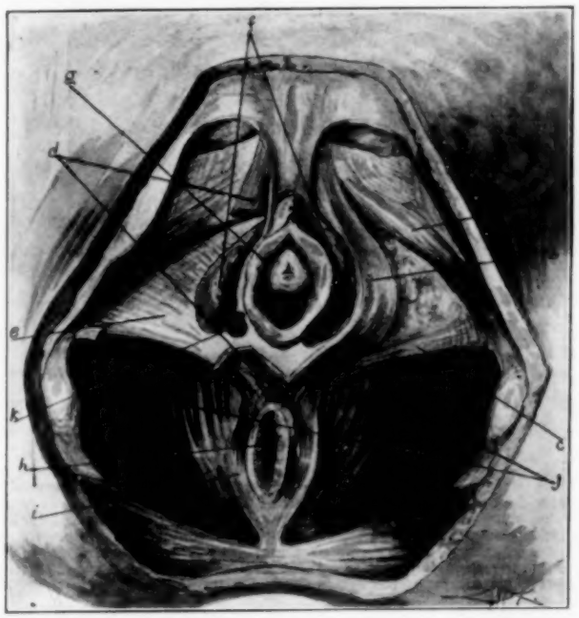

Fig. 3 (Plate 13 of Edward Martin's Atlas).—Labia, skin, subcutaneous fat, superficial perineal fascia and contents of the ischiorectal fossae removed. The ischiocavernosus (*a*), bulbocavernosus (*b*) and the superficial transversus perinei (*c*) muscles (belonging to the superficial perineal stratum) are intact on the left side; but the latter two are cut away (*d*) on the right side to expose the urogenital trigon (*e*) on that side. The bulbi (*f*), Bartholin's gland (*k*), vulva (*g*), and the anus (*h*), with the external sphincter (*i*), are intact. The levator ani (the innermost stratum) is divested of its outer fascia.

deeply seated but available portions of the levator ani and its fasciae, by true intrapelvic operating. I described and illustrated the various steps of an operation performed by myself for six years previously. During the past twelve years, most operators have obviously modified their former methods with an effort to engage the levator ani (with doubtful success), and a goodly number have abandoned their old methods entirely for a new and modern technic, professing to deal with the levator ani efficiently. While this has been achieved by some, in more instances it is evident from their descriptions and illustrations that they have mistaken some more superficial structures for the levator ani. This is one reason why I am again speaking on this subject, after a pause of thirteen years. A second is that recent and greatly superior anatomic studies and publications on the female perineum need to receive more general recognition, and a third reason is that the importance of the fasciae in the woman's perineum and pelvic diaphragm is recognized and emphasized by only few clinicians in their writings. The new and superior anatomic works referred to are by Halban and Tandler,[6] W. Liepmann,[7] Hugo Sellheim[8] and Edward Martin.[9] Waldeyer, Holl and Rieffel, whose authority is largely recognized in these newer studies, divide the female perineum and pelvic diaphragm grossly into three layers from within outward:

First, the principal part, a shallow funnel-shaped muscular layer (Fig. 4) composed of coccygeus and levator ani muscles, is invested on the upper or visceral side by a layer of pelvic fascia, called fascia endopelvina by some and rectovesical fascia by Gray; and on its lower or peripheral surface by another layer of pelvic fascia called the ischiorectal or anal fascia by Gray, it having a connection with the upper sphincter. This main portion of the pelvic diaphragm is usually clearly shown in most anatomies and particularly in Figure 4. The levator ani is subdivided by some into the ischiococcygeus, ileococcygeus, pubococcygeus and puborectalis muscles. It is the latter that is chiefly engaged in plastic restoration of the injured pelvic floor.

The second layer, the urogenital diaphragm or trigon in the *male* perineum is clearly set forth in our general anatomies; but in the female perineum it is dismissed with a mere mention of a triangular ligament, but no proper conception at all is given as in the anatomic studies above mentioned (Figs. 2 and 3), that in the female there is also a virile urogenital diaphragm or trigon composed of two potent layers of fascia, the outer one being even aponeurotic, with

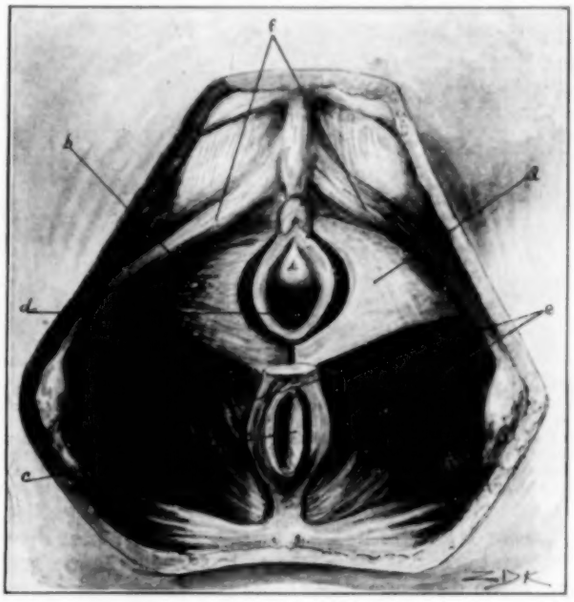

Fig. 4 (Martin, Plate XIII).—Chief muscles of the outer stratum or layer and the bulbi removed. The urogenital trigon (the middle stratum) composed of two layers of fascia with muscles between them, is intact on the left side (*a*), but has the outer aponeurotic layer removed on the right side, to show the fibers of the transversus perinei profundus (*b*) within. The anus (*c*), the vulva (*d*) and the levator ani (*e*) are intact as before. The crura of the clitoris (*f*) are shown, the left one in its relation to the ischiocavernosus muscle.

the muscle of the urogenital trigon (or transversus perinei profundus) between them. This composite

4. Noble, Charles P.: Am. Jour. Gynec. and Obst., April, 1887.
5. Goldspohn, Albert: Am. Gyn. and Obstetrical Jour., June, 1901.
6. Halban and Tandler: Anatomie und Aetiologie der Genitalprolapse beim Weibe, Vienna and Leipsic, Braumüller, 1907.
7. Liepmann: Atlas der Operations: Anatomie und Operations Pathologie der weiblichen Sexualorgane, Berlin, Hirschwald.
8. Sellheim, Hugo: Deutsche Frauen-Heilkunde, I, Die Geburt des Menschen, Wiesbaden, Bergmann.
9. Martin, Edward: Der Haftapparat der weiblichen Genitalien, Berlin, Karger.

fascial and muscular plate, closing the pubic angle formed by the descending rami of the pubis and ascending rami of the ischium, reenforces the levator ani from below. Like the latter, it has a median urogenital aperture whose borders are firmer, more distinct and less yielding than are the borders of the genital cleft of the levator. It composes the trigon in the female perineum, and beneath it lie the subfascial (superficial) muscles—the superficial transversus perinei, the ischiocavernosus and the bulbocavernosus composing the *third layer* (Fig. 2). The bulbocavernosus, surrounding the vulvar opening, reenforces the inner margin of the trigon; and these together are what some operators have mistaken for the levator ani, whose anterior median edges lie farther within, are less distinct and extend more in an inward and upward direction. This mistake is apparent from the illustrations and described technic of Robert T. Morris,[10] Arnold Sturmdorf,[11] C. A. Hall,[12] George B Somers[13] and C. W. Barrett.[14]

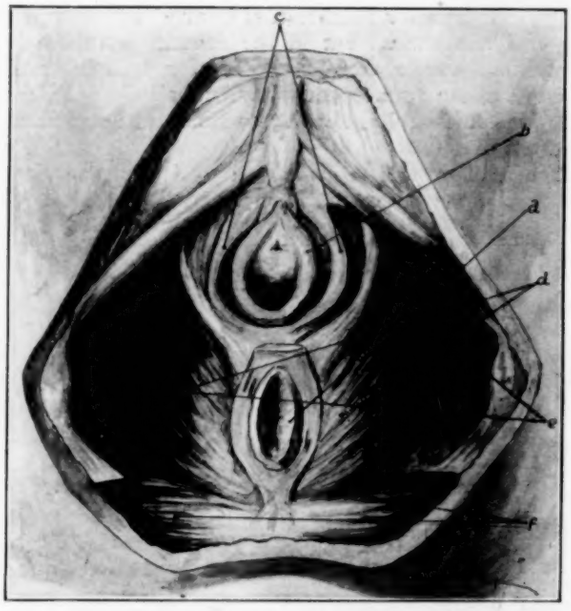

Fig. 5 (Martin, Plate XIV).—All the structures of the superficial and of the middle strata removed up to the margins of the rectum (*a*) and vagina (*b*), that have been carefully preserved, the latter as a projecting collar, which is surrounded by the remaining edge of fascial trigon (*c*). The ischiorectal fossae have been cleared out and the muscles composing their walls—the levator ani (*d*), the internal obturators (*e*) and the pyriformi (*f*)—have been divested of their fascial covering.

Edward Martin has made some of the best dissections and sections *en masse* of hardened female pelves under the direction of Waldeyer. Copies of some of his plates are here presented. He says, "The distinct edge which is felt in the vagina is not the levator edge, but the inner border of the urogenital diaphragm," that is, the fascial trigon. The levator ani lies beyond this structure farther within the pelvis, more like a curtain hanging down over the lateral bony walls of the pelvis. The needle or sharp volsellum that picks it and its fasciae up right will sometimes hook into the periosteum beneath it, and will then require releasing a little. These bilaterally receded parts of the levator

10. Morris, R. T.: The Female Perineum from a General Surgeon's Point of View, The Journal A. M. A., May 18, 1912, p. 1508.
11. Sturmdorf, Arnold: Am. Jour. Obst., September, 1912.
12. Hall, C. A.: Surg., Gynec. and Obst., February, 1909.
13. Somers, George B.: Repair of the Perineum, The Journal A. M. A., Nov. 11, 1905, p. 1462.
14. Barrett, C. W.: Am. Jour. Obst., April, 1909.

that we need to bring together and unite in the median line back of the vagina and in front of the rectum always lie from 4 to 5 cm. or more away from the muco-skin junction, where the operation begins; and their efficient union requires that a flap of posterior

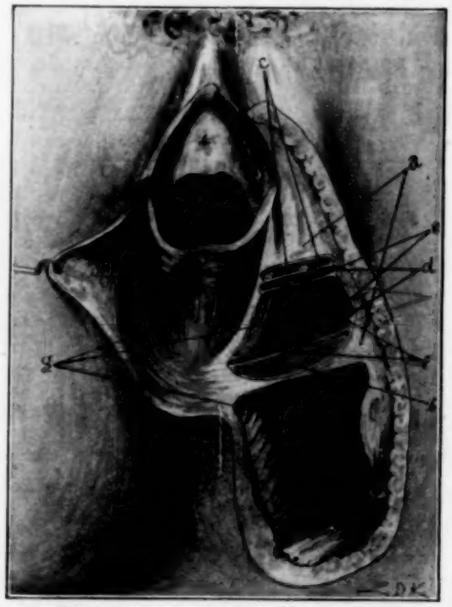

Fig. 6 (Martin, Plate XV).—Section showing the three main strata of the structures in the female pelvic floor, and the three layers of the trigon (middle stratum); *a*, superficial fascia; *b*, superficial transversus perinei muscle, and *c*, sections of bulbocavernosus and ischiocavernosus muscles, composing the outer stratum; *d*, the outer fascia (aponeurosis) of the trigon; *e*, inner fascia of the trigon; *f*, transversus perinei profundus muscle lying between these fasciae and completing the trigon (middle stratum); *g*, the levator ani, the innermost and chief stratum.

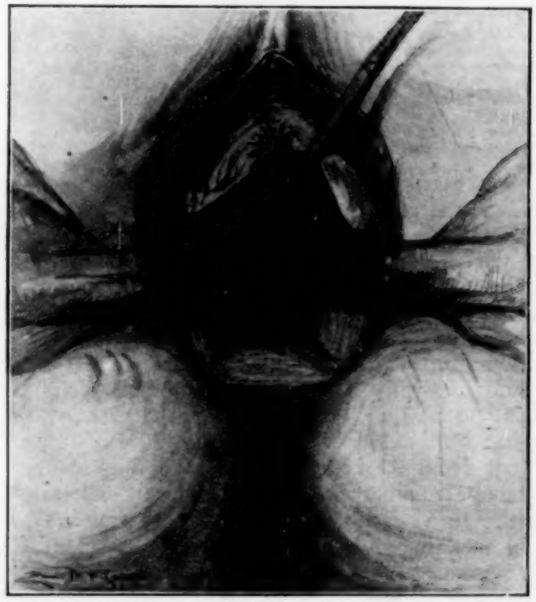

Fig. 9.—The posterior vaginal wall must be raised to a distance of from 7 to 8 cm. inward, and laterally to the level of the white line in the pelvic fascia of each side.

vaginal wall be raised extending from that line inward at least 6 to 8 cm. and laterally near to the arcus tendineus or white line in the pelvic fascia. These deep-seated receded parts of the levator ani with its fasciae are best caught up on each side and drawn

toward the median line preliminary for suturing, by curved volsellum forceps with semisharp teeth, so as to avoid puncturing hemorrhoidal veins unnecessarily, the rectum being held out of the way by the index-finger of the left hand.

Union of these parts thus brought into view is made by three or four turns of continuous or interrupted strong sutures of catgut chromicized or treated with formaldehyd, the third and fourth of which and all succeeding sutures catch enough of the areolar tissue over the rectum below and beneath the vaginal flap above to obliterate the dead spaces and to gather the broad vaginal flap into small anteroposterior folds and to fasten it sufficiently on top of the newly made bridge of levator beneath. The fasciae of the levator are really the most important part in the bridge, as its comparative inelasticity shows when it is thoroughly made. All of this bridge, if it is really composed of levator ani, will be within the pelvis beyond the more prominent and palpable ridges or strands that are commonly felt in the perineum passing up along the sides of the lower section of the vagina.

As the suturing of the wound continues from the bridge mentioned above downward, these inner edges of the fascial trigon, as the second layer in the pelvic floor, are also united, and likewise the bulbocavernosus and transversus perinei muscles (of the third layer) that should coalesce in the tendinous center of the outer perineum in front of the rectum. The technic of the operation in detail is shown in the illustrations. Suffice it to say that the buried sutures, whether interrupted or continuous (with a tie at every third or fourth turn), should not penetrate the vaginal flap,

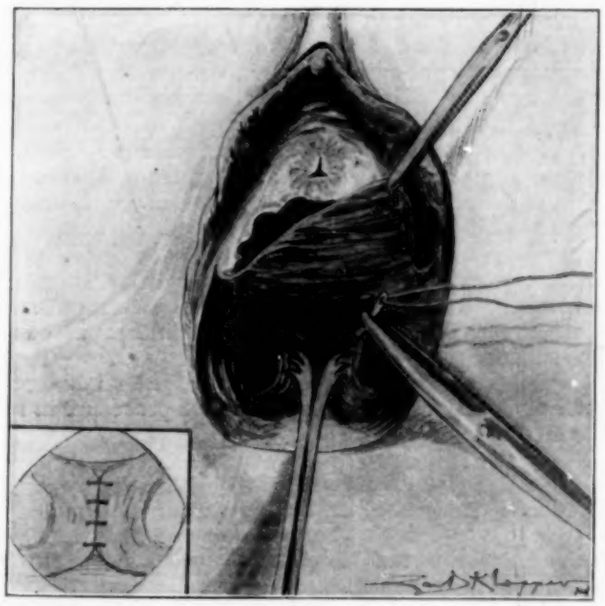

Fig. 10.—The corresponding portions of the levator ani with its fasciae are each caught up from the bony walls of the pelvis at a depth of from 5 to 8 cm. within, by a semisharp volsellum forceps curved sidewise. They are approximated and separately united near the median line, by three or four interrupted or continuous strong catgut sutures.

but merely catch into the submucous tissues beneath it. No figure-of-eight sutures should be employed anywhere in this operation.

In cases of complete tear through the sphincter ani, the operation, first suggested by a German for this injury, is first performed as follows: A shallow incision varying in outline between an inverted V and a semicircle is made from a little outside of the point of retracted sphincter end of one side to the corresponding point or sphincter end on the other side, and at a distance of from 1.5 to 2 cm. away from the edge of the tear in the rectum. From this curved line downward to the border of the tear a thin flap is very carefully dissected up without perforations, and turned downward over the cleft in the sphincter and rectum

Fig. 11.—After the levator has been sutured separately, the remaining wound is closed from side to side, from within outward, by continuous catgut sutures passed circuitously and knotted at every third or fourth turn, and the skin wound is closed vertically by interrupted silkworm-gut sutures.

to protect all sutures from contact with the bowel lumen or its mucous membrane. The raw surfaces and exposed ends of torn sphincter are then brought and united together by interrupted catgut sutures, over the raw surface of the flap. It is well to place a silkworm-gut suture in the rectovaginal septum beyond the first incision to relieve the tension on the other sutures.

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CHIEF FACTORS IN FAILURE OF OPERATIONS FOR RETRODISPLACEMENT OF THE UTERUS*

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This paper makes no pretense to novelty. It is just an emphasis on things said before. I like to ask "why," to dig up causes and to handle them with bare hands, and so I present just a few facts, recall a few failures and make a few suggestions.

First, the facts. They are alphabetic, but one needs initials to spell so big a word as "success."

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

I. ANATOMIC FACTS

The first group of facts is anatomic.

1. The normal uterus is a freely movable organ and is suspended in the pelvis between the abdominal cavity and the pelvic floor by the harmonious action of its several supports, that is, (*a*), the pelvic floor; (*b*), the adjacent pelvic organs; (*c*), the retentive power of the abdominal cavity; (*d*), the several ligaments, and (*e*), the normal relation which the uterine axis bears to the axis of the vagina.

In the erect posture of the woman, bladder and rectum being empty, the os externum is in the plane of the ischial spines, or a little below it and slightly posterior to a central position in the pelvis. The cervix projects into the vagina and is directed toward the last sacral vertebra, and is held in this position by the uteropelvic and the uterosacral ligaments, and the vesicovaginal fascial plate. The upper and posterior aspect of the fundus is at or a little above the level of the plane of the brim. The axis of the uterus is at nearly a right angle with that of the vagina, the body resting on the pubic (fascial) shelf.

The axis of the uterus has a wide range of inclination dependent on the degree of fulness of the bladder and rectum. With bladder and rectum moderately full the uterine axis conforms to the axis of the pelvis. With the bladder empty the axis of the vagina is almost horizontal and runs almost directly backward, while the uterus is directed forward at an acute angle and is in a position of marked anteversion, slightly anteflexed. The attachments of the uterus are for the most part of yielding character which allows great freedom of motion in all directions, rising and falling with the respiratory movements and changing its position with the different positions of the body. A full rectum pushes the uterus bodily forward and a full bladder displaces it backward.

The ligamentous supports of the uterus are the round ligaments, muscular bands covered with peritoneum which tend to hold the fundus forward, acting as "guy-ropes" to prevent it from falling backward.

The uteropelvic ligaments, which consist of bands of muscle-fibers running outward from the supravaginal portion of the cervix to the pelvic fascia within the base of each broad ligament, prevent the uterus from undergoing lateral changes in position and help to sustain it in its proper plane.

The broad ligaments, which act in some measure to steady the uterus in or near the median section of the pelvis, and the uterosacral ligaments made up of muscle and cellular tissue and covered with peritoneum, pull the cervix upward and backward and prevent its downward displacement.

The pelvic floor, which preserves the position and integrity of all of the organs and soft parts of the pelvis, indirectly supports the uterus. The pelvic floor, the uterosacral ligaments and the uteropelvic ligaments are the chief supports against downward displacement.

These facts are recalled mainly to rivet our attention on this fundamental fact—that nature has provided women with these ligaments and supports for certain definite purposes, and when such supports and position are at fault it is the duty of the gynecologist to determine before operation what are the digressions from the normal.

II. HISTORICAL FACTS

The second group of facts is historic. The pioneer work in this department of gynecology was done by Alquié about 1840. More than a quarter of a century afterward came Koeberle, 1869; Adams, 1880. The real work in this line, however, originated with Alexander, when in 1881 he performed his first operation, reports of which he published in 1884. In 1886, Kelly and Ohlshausen devised intra-abdominal operations for suspension of the fundus. Wylie, in 1886, intra-abdominally shortened the round ligaments for retrodeviation, and reported his cases in 1888-9; and in 1889 Freund shortened the uterosacral ligaments. More recently we have plication of the round and broad ligaments after the method of Coffey; also plication of the vaginal wall after the method of Emmet-Baldwin.

These were the pathfinders in our specialty, and although there have been a multitude who, since their work, have cried "lo! here" or "lo! there," I am persuaded that every procedure in operating for retrodisplacement is only a modification or adaptation of the procedure of one of these six primary methods.

III. FAILURES

And now as to the failures; but why speak of failures? Because, they are facts, big, bulky facts which ought not to be, and again because they are our most efficient if not our most delightful teachers. In the world of economics the word to conjure with to-day is "efficiency," and as we analyze the curriculums of the schools of commerce where this new science is being studied, we discover that the student is taught that waste is worth while, that every failure has a cash value. Let us liquidate ours and we have a goodly asset in this department of surgery. The proportion of failures was brought very forcibly to my attention at a recent meeting of the New York Obstetrical Society, at which time a symposium was held on "The End Results of Operations for Retrodisplacement within the Last Five Years," done by different notable gynecologists at the various hospitals in Greater New York. A summary of the results of this symposium is soon to be published in the *American Journal of Obstetrics*.

And now what is the cause of our failures? First, a plain neglect of the alphabetic facts of anatomy such as I have summarized above, a failure to take counsel with Nature's simple physiologic mechanics. Secondly, what might be called a passion for originality, in which the enthusiastic operator permits himself to be obsessed with his own idea to the forgetfulness of the work done by the pathfinders in our department.

The following points should be passed on before determining what shall be the operative procedure in a given case:

1. What is the age of the patient? If the woman is in the child-bearing period, no operative procedure should be undertaken which will cause any interference with pregnancy; whereas, if the woman is past the menopause, the simplest operative procedures which will hold the cervix upward and backward and the fundus forward should be undertaken.

2. What is the condition of the pelvic floor? It is trite to say that it is absolutely essential that a corrected or overcorrected pelvic floor of a firm muscular type, as for instance an Emmet-Holden, must accompany any operative procedures for retrodisplacement when there is a relaxed pelvic floor existing.

3. What is the position of the cervix, and can it be replaced up in the hollow of the sacrum? It has been interesting within the last year or so in Dr. Polak's Clinic at Long Island College Hospital, to see

the number of cases in which we have not, on discharge of the patients from the hospital, found the uterus in an anatomically perfect position. On investigation we have almost universally satisfied ourselves that the reason for such disappointment has been that we had a cervix which did not go backward when the fundus has been brought forward by the operation which we had selected for the given case, and on further observation we are satisfied that in these cases we have not achieved the desired result, because we did not appreciate the fact that there was a congenital short anterior invagination of the cervix which prevented it from taking its normal position, even though there was a firm pelvic floor and the fundus was brought well forward. Such cases we have time and time again seen recur. It is the information gained from this particular type of case which stimulated me to thought with reference to failures, and if possible by analysis to minimize my own failures.

Reynolds, in his original article "Anteflexion of the Cervix and Spasm of the Uterine Ligaments in Relation to Retroversion, Dysmenorrhea and Sterility," dated May, 1911, read before the American Gynecological Society, called attention, in connection with the treatment of sterility, to the advantage to be gained by lengthening the anterior vaginal wall and thereby allowing the cervix to be placed in normal position. I am of the opinion that Reynolds' article has not received the attention of which it was worthy, and so the facts of his procedure have not been appropriated to the correction of retrodisplacement of the uterus. With this idea in view I have tried to emphasize the advantages to be gained by the Reynolds' operation in conjunction with other operative procedures. I say advisedly that long ago the pioneers in this department of surgery laid it down as primary that, it matters not how far forward or by what method the fundus is brought anteriorly, cases will recur if the cervix is not placed upward and backward in the hollow of the sacrum, and my own observation goes far to commit me unqualifiedly to the same conclusion.

To be practically specific and illustrate the reasons for frequent failure, I mention the following complications and failures in some of the well-known methods which we have used:

1. The Webster-Baldy operations: Two tubal pregnancies due to angular constriction of the tube in its isthmic portion arresting the impregnated ovum in its transit to the uterus.

2. Lateral version of the uterus, due either to unequal primary development of the ligament, present but unnoticed or unappreciated at the time of operation, or to torsion of the ligament from defective technic.

3. Large ovaries slung over the encircling band formed by the round ligaments tend to fall low in the pelvis by lengthening of the utero-ovarian ligament, and become adherent to the posterior surface of the uterus or broad ligament.

4. The sigmoid may become adherent to the ligamentous loops, causing left-sided pain and digestive disorders.

5. The ligaments passed behind the uterus may become edematous from constriction and offer an inflammatory surface for intestinal adhesions.

6. Ovarian enlargement as a result of venous stasis of the broad ligaments.

7. A large uterus may sink in the pelvis through the encircling ligamentous loop and the ovaries are carried upward and to the median line and thereby become adherent to one another, forming a sensitive mass on the posterior wall of the uterus.

In the 437 Webster-Baldy operations performed by Polak and his associates, twenty-six patients had thrombosis of the pelvic veins, which had extended to the femoral and saphenous. The type of cases in which we have used this operation successfully is that in which there is a small uterus and two well-developed round ligaments.

Coffey plications of the round ligaments have been followed by the following complications: exudates in the uterovesical space and painful uteri with limited motion. Dyspareunia has been one of the chief complaints.

In the two cases in which the abdomen was reopened the pathology was interesting; in one the uterus was prolapsed and hanging from the anterior vaginal wall by two ribbon-like bands, the round ligament was not appreciable, being similar to those bands found after simple ventrosuspension, while in the other case the uterus was buried in adhesions.

This operation is useful in covering over raw surfaces on the anterior uterine wall after myomectomy, etc., in conjunction with a uterus which tends to sag backward.

The chief objection we have found in the operation is that it brings the whole organ forward in the pelvis yet does not exaggerate the anteversion and subsequently the cervix slides up under the symphysis followed by the backward displacement of the fundus.

We have had a number of failures by the Gilliam, and the Montgomery-Gilliam, for the reason that the cervix is not carried up into the hollow of the sacrum.

When prolapse is associated with retrodisplacement in a woman near or at the menopause the transposition operation has been very satisfactory. The Emmet-Baldwin plication of the anterior vaginal wall has been done very seldom but is considered a very satisfactory procedure because it places the cervix well backward and upward.

IV. CONCLUSIONS

It is obvious that I have only gleaned in the field which stretches to the horizon of surgery, but this much grain may be gathered from what I have gleaned.

1. The gynecologist must be strong in the grace of discriminating; he must receive as alphabetic the proposition that the cervix must be placed upward and backward in the hollow of the sacrum.

2. No one operation already devised or to be devised will cure all sorts and conditions of cases. As individual as is the patient, so individual may be the patient's displacement, and this element of individuality must be seen clearly and bulk large in the operator's diagnosis—hence, the absolute necessity for the fundamental grace of discrimination.

I beg leave to report a personal interview which I had with an operator of note two years ago, at which time I asked the following question, "Do you do your operation on all cases of retrodisplacement of the uterus?" and the answer was in the affirmative.

The gynecologist must possess in a great degree the grace of self-elimination. The passion for spurious originality must be brought to heel like a well-broken dog. In my opinion the six procedures recalled in the historical survey, with the addition of the Reynolds operation in those cases in which a short anterior invagination of the cervix exists, present a sufficient

number of points of departure for, loosely speaking, every case. Given an intelligent appreciation of the essential element in each one of these six alphabetic procedures one is on the line of approach to the cure of every case.

3. Adaptation, modification and synthesis. Having made his selection of the main procedure it remains only for the operator to apply that procedure which with its individual modifications is called for by the case before him. The opportunity for modification is infinite, as various as the cases themselves. The modification may consist of an exclusive use of one of the main procedures, or by synthesis of the whole or part of two or more of the main procedures. In short, success in this particular operative field, and that must always mean success for the individual patient, is to be achieved by an unqualified commitment to fundamental anatomic facts, by elimination of self and by adaptation of existing procedures to individual cases by a process of modification and synthesis.

108 Lincoln Place.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. GOLDSPOHN AND HOLDEN

Dr. George R. White, Savannah, Ga.: Our failures in these cases, whether they be of retroversion or prolapse—the two conditions are very closely associated—are because we do not take cognizance of natural methods. I disagree with Dr. Holden in placing the emphasis on the anatomic parts. It has been mentioned that the perineum supports the uterus; the uterus stays up as well when the perineum is cut right through. The uterosacral ligament is not much of a factor. The emphasis should be placed on the uteropubic ligaments, the so-called cardinal ligaments. The easiest way to do the operation is to make a small incision in the broad ligament, opening it up fully and putting in a retractor. Down under the coronary ligaments are the supports of the ligament, and there the deviations of the uterus may be straightened. The tissues here are strong and firm and will hold during pregnancy. Operation is done in different ways, by the Marcy operation, by the adnexal operation, etc. Both operations are good and either can be done if the ligaments have not broken loose by a difficult delivery and become contracted in the side of the pelvis. To get at them one must come down over the broad ligament and pull them out until reaching firm tissue; then use them where they belong. On that line I believe we shall make our advance in the treatment of retrodisplacement and prolapse.

Dr. H. Grad, New York: I was glad to hear Dr. Holden's paper because it deals with the failures. Dr. Holden referred to the papers on Retroversion of the Uterus, which were written for the New York Obstetrical Society, and I had the pleasure of looking up the operation for retroversion in one of our hospitals. I found that at the Woman's Hospital about 800 women had been operated on in five years. Only a small number of these could be traced. The studies of the cases that could be traced showed that no matter what method of operation was employed for the uncomplicated cases of retroversion, success was obtained in about the same proportion of cases. Anatomic results were obtained in a large number of cases. The symptomatic results in the Alexander operation were about the same as in the Gilliam operation, almost the same as in ventrosuspension. It seemed to make little difference what operation was done in the uncomplicated cases of retroversion. It makes no difference whether one plicates the round ligament or cuts the broad ligament and stitches it together, they all give about the same result. The trouble comes when complications enter, when the cervix has fallen down, when the cardinal ligaments which Dr. White spoke of have retracted and allowed the pelvic floor to sink. In these cases failures will follow. A large proportion are due to the fact that the anterior wall of the vagina is short, as Dr. Holden pointed out. Here we must treat the complications. Dr. White said that the uterosacral ligaments did not give much support to the uterus. This may be true, but when one utilizes them in operations they give good results. About three years ago Dr. Jellet of Dublin published reports of twenty cases in which the uterosacral ligaments were used. Since that time we have been using the method of shortening the uterosacral ligaments in complicated cases in which the pelvic floor has been split and with excellent results. It is of first importance, therefore, to distinguish between lacerations of the perineum and of the pelvic floor, as laceration confined to the perineum is always a laceration in the median line. If superficial it will give rise to but few or no symptoms, but if deep enough it will separate the transversus perinei muscles which coalesce at this point with other muscular structures and by retraction of their torn ends will cause a gaping vulvar orifice. When, as is usual, both of these anatomic structures are involved, the laceration of the perineum being central and that of the pelvic floor lateral, it is of first importance to make the dissection not alone within the vagina to restore the pelvic floor, but likewise to carry it down low enough so that the retracted transversus perinei muscles can be included with the overlying fascia and sutured at the same time the pelvic floor is repaired.

Dr. John M. Fisher, Philadelphia: Dr. Goldspohn very properly calls attention to the fact that in order to appreciate the symptomatology and clinical significance, as well as the operative procedure adapted to the proper repair of the pelvic floor, it is of first importance to have a clear conception of the anatomy of the parts. Evidently he has not read the article on Diseases of the Vulva and Vagina in Keen's Surgery, volume 5, in which I described minutely the very thing to which he calls attention, the triangular ligament, or as I term it, the vaginal septum. In the study of vulvovaginal injuries we must take into consideration this triangular ligament in its relation to the muscular structures of the vulva. If this is not done, especially in operating on the pelvic floor alone when there has been laceration of the perineum in addition, we still have to deal with a gaping vulvar orifice.

Dr. C. M. Echols, Milwaukee: A word about the Reynold's operation which Dr. Holden has had occasion to do. I have been looking for indications during the last year to do this operation but very rarely have found a suitable patient, especially among multiparous women, who constitute the majority of patients on whom we have to operate. Most of these women I have to operate on have a little tendency to cystocele, and the Reynold's operation is contraindicated in all such cases.

Dr. John A. McGlinn, Philadelphia: In the matter of the history of the operation referred to as the Reynolds operation, Dr. B. F. Baer of Philadelphia did this operation at the same time as Dr. Reynolds, and I feel that it really deserves to be termed the Reynolds-Baer operation.

Dr. Channing W. Barrett, Chicago: Dr. Goldspohn and I agree that the importance of this question lies in the fact that perineal work is in the developmental process instead of a finished condition. He laid stress on the inefficiency of many of the standard cardinal operations, and I agree with him thoroughly. Dr. Goldspohn did pioneer work some years ago, but he stopped by getting deep enough, and then, instead of isolating muscles and fascia—and he gives the reason for that—he left it at that point, closing by side to side sutures. I emphasize the point that this is mural work, dealing with the lower wall of the abdomen, and that it is hernioplasty. Several years ago, having a condition of this kind, I devised a procedure of making a longitudinal incision posteriorly and closing it transversely.

Dr. Brooke M. Anspach, Philadelphia: The attention which has been given in recent years in perineorrhaphy to the dissection and coaptation of the actual fibers of the levator ani muscle and the deep layers of the pelvic fascia, has undoubtedly improved the results of the operation. In all operations of this type, it is desirable to place some sutures in such a fashion that the anterior wall of the rectum is

drawn well up toward the cervix. Dr. Ward of New York has laid stress on this point. It is undesirable in these operations to remove any more than a minimum amount of the vaginal mucous membrane. If the vaginal mucosa is extensively removed in the denudation and dissection preceding the introduction of sutures, the redundancy of the vaginal wall which nature has provided in the vaginal sulci is lost, and a repetition of the laceration in subsequent childbirth is almost inevitable.

DR. ALBERT GOLDSPOHN, Chicago: I am convinced that many gentlemen who are not dealing with the levator ani in their operations think that they are. They are honest about it but they are mistaken. While Dr. Barrett may now be going deep enough to seize the levator, he has repeatedly mistaken the inner edges of the trigon and bulbocavernosus muscle as the levator ani muscle in his illustrations. Edward Martin says in his new Atlas, *"Haftapparat der Weiblichen Genitalien"* that this is a common clinical mistake. With regard to the remark of Dr. Fischer, concerning the article in Keen's Surgery, no proper conception at all is there given of the urogenital trigon—a three-ply structure—as constituting the most tangible, the middle stratum, of the female perineum. Waldyer's division of the female pelvic floor and perineum into three strata, makes the anatomy much clearer. What has been mistaken, by many operators for the levator ani, is the prominent vaginal edge of the fascial trigon (of the second stratum) reenforced by the bulbocavernosus muscle. These two together can be felt as a firmer structure than the levator ani ever is, at both sides of the vaginal entrance to the pelvis; but they lie more superficially, about in a plane extending between the pubic rami and only about 2 to 3 cm. from the skin border; while the levator lies within the pelvis, more laterally and at twice that depth.

In retroversion work we should choose methods that are anatomically correct. Any procedure that consists in doubling up the thick uterine end of the round ligament in the shortening process, and then depends on the terminal frayed-out useless peripheral end of the ligament to do any holding, is anatomically irrational; not only because the round ligament is so diminutive there, but also, it has no attachment or anchorage outside of the parietal peritoneum, except areolar tissue in its curved course to the inguinal canal. It will yield indefinitely to any pull that is sufficient to dislodge the parietal peritoneum. The Webster-Baldy and the Emil Ries' operations, therefore, I regard as inconsistent on anatomic grounds. Very much better are attempts to get at and to cross the sacro-uterine ligaments in front of the cervix, by way of the vagina. Retroversion is most efficiently dealt with by some transplantation of the round ligament into the abdominal wall, in some one of ten or more different ways. Even in cases in which perhaps it is not ideally the best thing theoretically, practically it is the best thing, because we make use of the thick end of the round ligament to do service; and because this type of operations has borne a good clinical test.

DR. FREDERICK C. HOLDEN, New York: My main object was to emphasize the importance of the proper selection of cases and of operations. Many men are doing one operation in all cases. They may not know that they get failures, but I think others find them. I would say to Dr. McGlinn that I did not mean to rob Philadelphia of any of the glory in the Wylie-Baer operation. I knew that Drs. Wylie and Baer were doing this work simultaneously, but I believe Dr. Wylie was the first to report his results. We do not do the Reynolds operation in the presence of cystocele.

Physical Examinations and Efficiency.—We are already beginning correctly to evaluate the importance of periodic physical examinations in maintaining a continuous state of physical efficiency. Whenever these have been carried into effect, they have resulted in the detection of numerous defects, or diseases, in their incipiency, and made it possible to apply suitable remedies before irretrievable damage has been done. —J. W. Schereschewsky, *Public Health Rep.*

ENUCLEATION WITH TRANSPLANTATION OF FAT INTO THE ORBIT*

EDWARD STIEREN, M.D.

PITTSBURGH

The loss of an eye is to any one a dire calamity, but to the laborer or artisan it has its economic side as well, since employers are usually adverse to giving employment to a man who possesses but one eye.

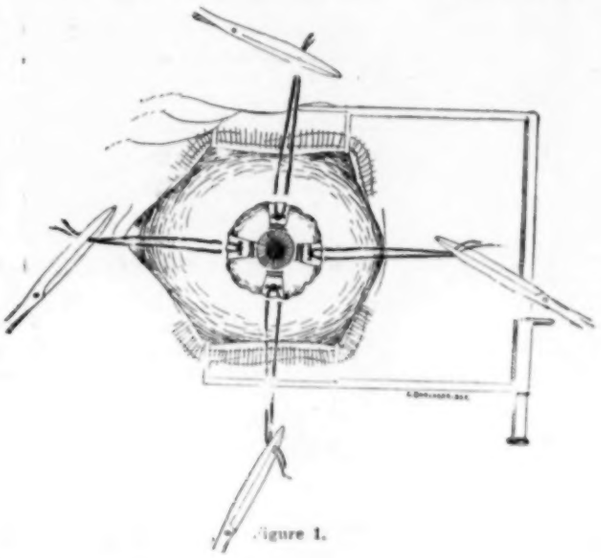

Figure 1.

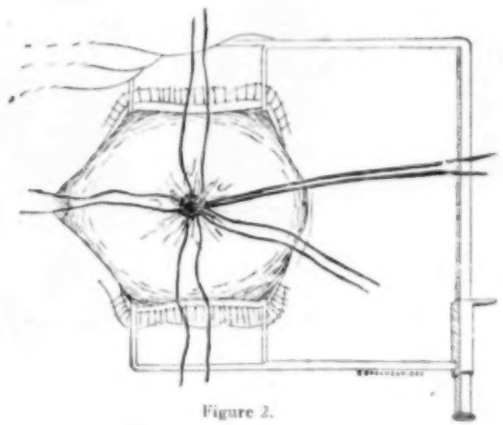

Figure 2.

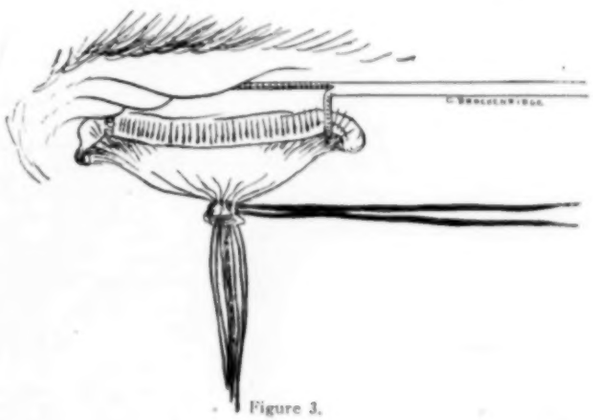

Figure 3.

* Read before the Section on Ophthalmology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

It becomes our duty therefore when called on to remove an eye to provide for a cosmetic after-result that will simulate as nearly as possible a normal appearance, and to strive not only for mobility of the artificial eye but to provide as well a sufficient cushion

Figure 4.

or stump for it to rest on and thus do away with the tell-tale depression of the upper lid, so conspicuous in simple enucleations.

For the past two years and a half I have transplanted fat into the orbit in all of my cases of enucleation, sixty-six in all.

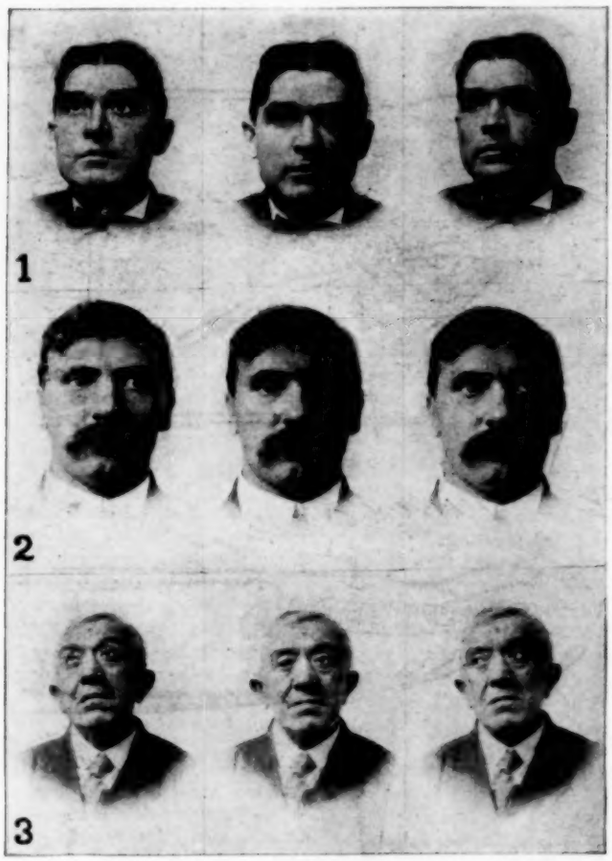

Fig. 5.—In this and Figure 6, cases selected at random from the last twenty-six illustrate the adaptability of the operation to all conditions requiring enucleation. 1. Left eye, exudative iridocyclitis with increased tension; eye blind and painful. 2. Right eye, phthisis bulbi following penetrating injury through cornea and ciliary region. 3. Left eye, absolute glaucoma.

In the last twenty-six cases I have departed from the usual technic as originally proposed by Barraquer, since with it I noticed too frequently a shrinkage of the cushion from absorption of the fat. I reasoned that the old technic which required the fat to be enclosed within Tenon's capsule provided for entirely too little fat, and also that the fat was not favorably placed to secure the best nourishment. The success with the improved technic, which calls for a much larger piece of fat and direct union of the fat to the conjunctiva, has been most gratifying.

I divide the conjunctiva close to the limbus, dissecting it and Tenon's capsule back as far as possible. A strabismus hook is then introduced under the superior rectus, which is held by an assistant while a double-armed No. 00 twenty-day chromic catgut suture is passed through the muscle from below upward close to its lateral margins behind the hook and loosely tied on top. The suture is then passed through the con-

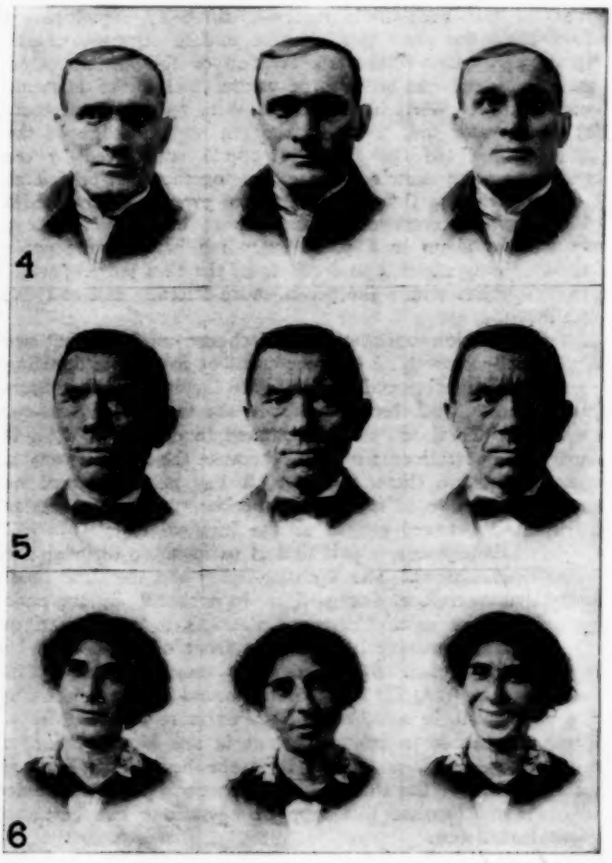

Fig. 6.—4. Left eye, melanosarcoma of choroid. 5. Right eye, incised wound through upper lid, cornea and sclera; lid sutured and eye enucleated with transplantation of fat at the same time; mobility good, but upper lid thickened and stiff from scar. 6. Right eye, large opaque staphyloma of cornea.

junctiva about 2 mm. from its edge directly over the muscle; it is not tied at this time, but only disarmed and the ends held in a pair of hemostats. The internal, inferior and external recti muscles with their overlying conjunctiva are similarly treated (Fig. 1). The eyeball is then forced out of the socket by pressing the speculum backward, drawn toward the nose, and the optic nerve severed. The oblique muscles and any adherent tissues are severed and the socket turned over to an assistant, who, making gentle traction on the four catgut sutures and retracting the conjunctiva and muscles, checks the hemorrhage by packing the cavity with hot moist boric acid cotton compresses.

The abdomen, which has been prepared previously, is now bared and a vertical incision is made in the median line beginning just below the umbilicus and carried downward about 2 inches, cutting through to the aponeurosis of the rectus abdominalis. At the bottom of this incision a similar one is made at right angles and a flap dissected which contains the full thickness of the abdominal fat. A piece of fat which should include the subcutaneous tissue and which should be *about the size of the enucleated eye* is then excised. The abdominal wound is turned over to a second assistant who checks hemorrhage and sutures the integument. The excised mass of fat is then introduced into the orbit (hemorrhage from which is usually checked by this time) *with the subcutaneous tissue upward*, so as to provide for union between it and the edges of the severed ocular muscles and conjunctiva. The catgut sutures are then tied together, traction is made on them and a purse-string suture of No. 0 twenty-day chromic catgut is passed through the conjunctiva and firmly tied (Figs. 2 and 3). Figure 4 shows the appearance of the stump three weeks later, after absorption of the sutures. I allow wearing of the prosthesis as soon as this occurs.

There is no reaction following the operation; the lids do not become swollen or ecchymosed, the only precaution which I insist on being to fill the eye with my modification of White's ointment[1] after the operation and daily thereafter for a week. The time required in the operation is usually about thirty minutes.

There will result a certain amount of absorption of the fat, varying from a third to a quarter of its bulk, but this usually ceases within six weeks after the operation, leaving a soft, mobile cushion on which the ordinary Snellen eye rests comfortably and moves with the sound eye.

Westinghouse Building.

ABSTRACT OF DISCUSSION

DR. JOHN A. DONOVAN, Butte: Some years ago the British Ophthalmological Society appointed a committee to investigate and report on enucleation operations. If my memory is correct, they spent three years careful study and at the end of that time reported in favor of complete enucleation of the eyeball, stitching the tendons together and using the Snellen reform eye. Though I have in season and out of season, preached against so many enucleations yet we have not yet reached the place at which it has become an obsolete operation, so we consider first the safest method, then that giving best cosmetic results. I must admit I have, as a rule, been very well satisfied with the operation as approved by the British Society. Stieren's operation when it is properly performed as far as the eye is concerned appears to be perfectly safe and probably does correct considerable of the cosmetic results of enucleation; this undoubtedly has good features. Though it, in my opinion, entails an extra operation on the abdomen—this though slight, adds a slightly greater risk—this replaced tissue also must conform to all the requirements of surgical perfection thus entailing again some risk within the orbital cavity. All of which I do not feel, considering the very good results obtained otherwise, to be at all times justifiable. Of course, in infected cases, as most cases are, I presume Dr. Stieren himself does not recommend it. In the operation I prefer to fix each tendon in a curved advancement forceps, cut it and leave it in the forceps till all are cut, then, after removing the globe, stitch these tendons and conjunctiva together by through-and-through suture. This method saves considerable time over that of inserting the stitch in each when reached. I put in a Snellen eye about the fifth day and change its size in a few weeks. I consider the early and constant wearing of a full-sized eye one of the essentials to a neat, successful termination.

DR. JOHN GREEN, JR., St. Louis: An implantation operation has a primary and a secondary object: first, to form a prominent and mobile stump, which shall impart some of its mobility to the prosthesis; second, to produce a socket which shall be shaped to promote and not hinder the drainage of tears and mucus. A mild degree of conjunctival irritation due to contact between the glass eye and mucosa is the rule. After simple enucleation the secretion almost invariably finds its way behind the prosthesis and sinks to the bottom of the socket, there to form a medium for the cultivation of microorganisms. The Frost-Lang operation, namely, the implantation of a hard sphere of glass, platinum or gold into Tenon's capsule, seems best to meet the indications. Fox, and more recently Sweet and Greenwood, have warmly endorsed this procedure. The latter's experience has led him to adopt a larger sphere than hitherto used. With the sutures disposed in three layers a purse string around Tenon's capsule, muscle sutures, and continuous conjunctival stitches—there is hardly any danger of extrusion. The appearance of the patient after this operation is all that could be desired. Mobility is excellent, there is no depression of the upper lid, and drainage of secretions toward the lid margin is promoted. Some may be deterred from performing this operation by the fear of sympathetic ophthalmia, but, as has been shown by both Sweet and Greenwood, this fear is groundless. Dr. Stieren believes that after a little primary shrinking the implanted fatty mass retains its volume indefinitely. Is such an assumption justifiable? Is it not a fact that after simple enucleation the orbital fat slowly becomes less in volume, the process of shrinkage covering several years, and that which appears after, say, two years, to be a fair result, is shown after five or more years to be a deep cavity into which we place an artificial eye that deceives no one as to its artificiality. Dr. Stieren's oldest cases date back only two and a half years. What will be the appearance of the socket in, say, two and a half years more? Let us not forget too that with advancing years much of the body fat disappears. Is it reasonable to suppose that the implanted fat will be exempt from this process? When cosmetic considerations are of prime importance, I believe the Frost-Lang operation as modified by Greenwood is the operation of choice.

DR. W. E. LAMBERT, New York: I have had a limited experience with this operation, and the immediate result has been satisfactory. I have not been able, however, to follow them up. My impression is that it is not permanent. Has Dr. Stieren followed up his cases, and what is the permanent result? What is his experience with secondary implantation, putting the fat in two, three, or four months after the enucleation? That is being practiced by some and they make great claims for it. I am doubtful as to its being an efficient or a wise operation.

DR. EDWARD B. HECKEL, Pittsburgh, Pa.: I have done a number of fat implantations or transplantations and have come to the conclusion that it is a case of "love's labor lost." I think if we will stop to consider the mechanics of the movements of the artificial eye, our ideas will change as to trying to produce an artificial stump to take the place of the enucleated eyeball. In the case of an eyeball the movements are brought about by a pull, in the artificial eye it is a matter of a shove. The artificial eye moves because the tissues on one side are withdrawn and the tissues on the other side are shoved so that when the artificial eye moves out it does so because it is shoved out, and down because it is shoved down,

1. As I stated in an article on "The Treatment of Ulcer of the Cornea," (Pennsylvania Med. Jour., June, 1907), I have modified and I believe improved the formula originally suggested by Dr. White of Richmond by adding a small amount of lanolin in which to dissolve and work up the mercuric chlorid and sodium chlorid, as follows:

Hydrargyri chloridi corrosivi	gr. i
Sodii chloridi	gr. v
Adeps lanae hydrosi	q.s.
Petrolati	ʒ vi

The sodium chlorid and mercuric chlorid are dissolved and rubbed up in about 1 dram of lanolin; the petrolatum is boiled for five minutes, the impregnated lanolin added and, after boiling for five minutes longer, the liquid ointment is poured into jars. After it has cooled it will be found to be of a proper consistency to introduce under the lids, becoming slowly melted by the heat of the body and permeating to all parts of the conjunctival sac.

etc. To get the greatest mechanical advantage for these movements the muscles should be spread apart and not bound together about a small ball of fat or what not. I much prefer to do a simple enucleation without any sutures. After the eyeball has been removed and the bleeding stopped, I allow the lids to collapse and place over them a small roll of sterile gauze about as large as my little finger and cover all with a tight bandage, which is permitted to remain in place for seventy-two hours or even longer. By this method the recti muscles are forced apart and find attachment in the stump where the mechanical advantages for the movements of the artificial eye are greatest. My results for motility of the artificial eye are excellent.

DR. EDWARD STIEREN, Pittsburgh: I am opposed to all implantation operations; I mean the introduction of any foreign substance, as a glass ball. I believe it is surgically incorrect. I make a distinction between implantation and transplantation, as of autogenous fat. With regard to Dr. Green's question, whether the results are permanent, my experience extends over three years now. The case of staphyloma illustrated by Figure 6 was done over two years ago. The picture was taken just before the paper was sent in last March. The mass of fat is still as good. There will be a certain amount of shrinking, probably one-third. Time will tell whether this is a satisfactory operation with permanent results. I am so pleased with it that I shall go on with it. I have had no experience with late transplantation. At the last meeting of the American Ophthalmological Society, Dr. A. N. Alling, who reported two cases in 1910, said to me that he thought the mobility would be as great if the four recti muscles were not sutured together. I tried it since then in one case and the result was disappointing. While the cushion is satisfactory, still the mobility of the eye is poor. I find that to fix the implanted fat thoroughly to the conjunctiva helps to nourish the fat.

REPORT OF A CASE SIMULATING ELEPHANTIASIS *

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RICHMOND, VA.

History.—M. D., colored woman, aged 29, single, factory-hand, came under my observation at my clinic at the Richmond City Jail Hospital in February, 1913. Her father had died of prostatic enlargement; her mother was living and in good health, aged 45; one brother and one sister had died in infancy. The patient had had the diseases of childhood, and with the exception of an attack of malaria at 16 years of age, had never otherwise been sick. Menstruation began when she was 12 years of age, and was regular and normal in amount until the patient was 21, when it became irregular, appearing frequently twice a month and lasting as long as seven days. For the past year it had been scanty, lasting only three days, and accompanied with a great deal of pain which was usually worse on the last day, at which time she would expel a clot. The patient uses alcohol, drinks tea and coffee, uses tobacco, and probably is a prostitute, though she denies the history of any venereal disease.

Present Illness.—About three months prior to this time, February, 1913, the patient noticed a swelling of each labium which was not painful, but itched continually. The right labium began to swell about one week before the left, and then both increased in size very rapidly for two months, after which time there was little change noted. Coincident with the time that their growth checked, there appeared on the right labium, or anterior growth, an ulcerated area, accompanied by a profuse lymphorrhea. The left, or posterior growth, was painful at times, and the patient suffered with a pain in her back and an uneasy feeling in the tumors.

Physical Findings.—Pendulous growths were noted from each labium which hung almost to the knees when the patient was standing, the one from the right labium hanging in front and the one from the left, behind. The posterior growth was not quite so large as the anterior, but more irregular in outline, and did not hang quite so low. It showed several large ulcerated areas, apparently the result of friction in walking, from which lymph continually exuded.

Owing to the location of the growths, a vaginal examination was not possible. There was no abnormality noted in any organ of the body. The patient, however, had lost about 20 pounds in weight since the appearance of the growths in December, 1912.

Examination of the urine was also omitted because it was impossible to secure a satisfactory specimen.

Blood examination revealed: white cells, 7,200; red cells, 3,400,000; differential count: polymorphonuclear neutrophils, 63.5; lymphocytosis, 17.3; large mononuclears, 15.4; eosinophils, 3.2; basophils, 0.6. The *Filaria sanguinis hominis* was not found. The Wassermann test was positive.

The specimen of tissue from the growths consisted of fibrous connective tissue showing an extreme condition of edema. There were small perivascular collections of round cells around the blood- and lymph-vessels.

View of growth from the rear, patient stooping.

Diagnosis.—When the case was first brought to my attention I felt confident that it was one of elephantiasis, and it might be well to review briefly this condition. Of course, it is a disease of the tropics, although sporadic cases are seen in the southern portion of the United States. Dr. Kelly reports quite a few well-defined cases. It is caused by the animal parasite, *Filaria sanguinis hominis*, of which there are two varieties, the *Filaria sanguinis hominis diurna* and the *Filaria sanguinis hominis nocturna*. The diurnal variety is found in the superficial vessels only during the waking hours, and the nocturnal is found only when the patient is asleep. It was a source of confusion to know how this curious phenomenon could be explained, and the puzzle was finally solved when a man who had the nocturnal variety was accidentally killed in the daytime, and the blood from his deeper vessels was examined, and was found to be swarming with filariae where they had gone in hiding until the

* Read before the Richmond Academy of Medicine and Surgery.

patient slept, when they would migrate to the superficial vessels where they were easily found.

In this condition the lymph-vessels are greatly dilated because of the blocking or choking of these channels, forming a varix, usually around the base or pedicle, together with large blood-spaces or sinuses, affording an excess amount of pabulum to the structures supplied, which accounts for the rapid growth of connective tissue. Accompanying this lymphedema, wherever there is a break in the continuity of the surface, there is usually a profuse lymphorrhea.

There is a condition caused by syphilis known as syphilis infiltrous in which the pathologic findings are identical with the foregoing, but in which the filaria is absent, and after numerous consultations I concluded this to be the correct diagnosis in this case.

Treatment.—Having arrived at this diagnosis, I determined to remove these growths and this was done by making an incision through the skin on the outer side of each growth the shape of the letter Y inverted so that the flap to be left had the appearance of an inverted V. This was done to allow for the retraction incident to the weight. Large venous blood-spaces were encountered with every stroke of the knife. They were easily controlled with clamps and many did not require ligatures. Care was taken not to injure the vaginal pouch, which I found pulled down and almost obliterated, but which retracted to a certain extent as soon as the growths were removed. A very satisfactory approximation of the skin-flaps was secured, rubber drainage-tubes were left *in situ*, and the usual dressings applied. In order that we might watch the immediate result of the operation, salvarsan was not given for one week, at the end of which time there was a general lymphedema and a profuse lymphorrhea with every indication of a rapid return of the condition. One week after the administration of salvarsan a marked improvement was noted, and in three weeks after the operation, a second dose was given. This was followed by a prompt disappearance of the edema, and the patient was soon able to be about her duties. The combined weight of the growths was 12 pounds. The patient passed from my observation in May when she left the city jail to serve a sentence in the state penitentiary.

Recently I was given an opportunity to secure a photograph which shows the patient to be in a very satisfactory condition. The labia are absent and only a small portion of the clitoris is left. The vagina is normal, and the patient has no leukorrhea or discomfort of any kind. Her general condition is excellent.

701 Grace Street West.

Traumatic Neuroses.—A. Ciampolini, the medical inspector for the state railroad system of Italy, has recently published in *Ramazzini*, 1914, viii, 1-108, an analytic study of 160 out of a total of 200 cases of neurosis following railroad accidents. The majority were commercial travelers and postal clerks; they seem to acquire what might be called a professional dread of accidents, and this is an important factor in the neurosis. The susceptibility to suggestion is extreme and a physician's incautious remark may start or aggravate the neurosis. The jar of the trains does not seem to predispose the trainmen to nervous trouble, as these formed only 12 per cent. of the total. Only 0.465 per thousand developed neuroses among 25,793 employees who met accidents of various kinds in 1909, and the proportion has been the same since. Ciampolini states that after the question of indemnity had been settled the neurosis gradually subsided with final complete recovery.

INFECTION OF NASAL CAVITY FROM DISEASED TOOTH-ROOT

SPECIMEN SHOWING PATHWAY OF INFECTION THROUGH THE MAXILLARY SINUS*

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The possibility of the passage of an infection upward from a decayed tooth-root through the maxillary sinus to the nasal cavity is a matter of common medical knowledge. The rhinologist frequently finds in this sequence of events a long-delayed explanation, especially of trifacial neuralgias as well as various nose and throat conditions.

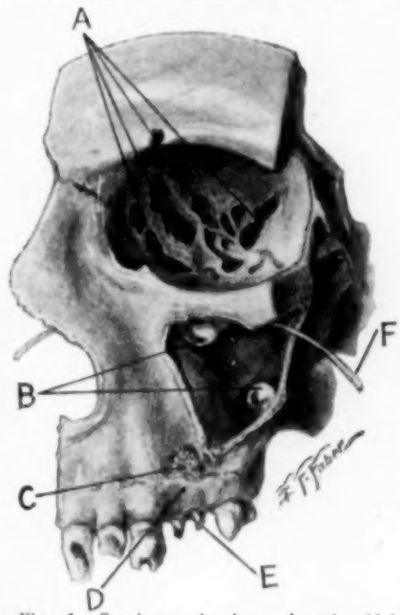

Fig. 1.—Specimen showing: *A*, ethmoidal sinuses opened from orbital aspect and found to be free from any evidence of disease; *B*, polypi (upper one located at the lip of the ostium); *C*, area of necrosis around tooth-root; *D*, fistula from tooth-root opening on the gum; *E*, diseased first bicuspid; *F*, bristle passed from the maxillary sinus into the nose through the normal ostium.

The accompanying illustrations are from a post-mortem specimen in which the pathway of such an infection is strikingly marked out by pathologic changes, namely, a necrotic area around the root of a first (or second) bicuspid tooth, a fistula from this area opening on the gum, changes in the mucous membrane of the maxillary sinus adjoining this area and with polyp formation especially around the ostium, both on the maxillary sinus side and in the nasal cavity.

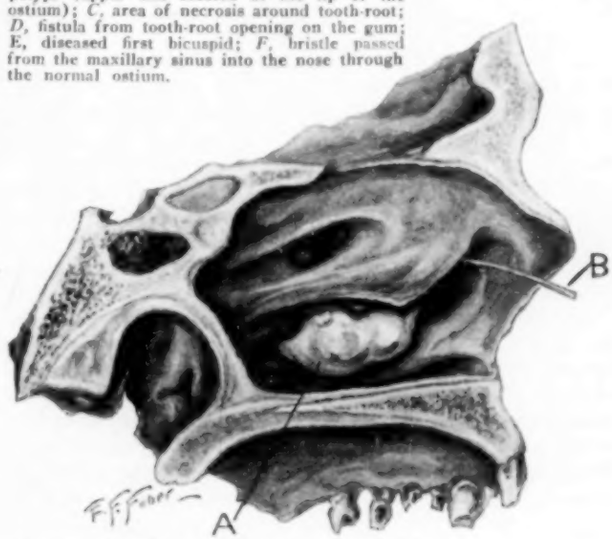

Fig. 2.—Specimen showing: *A*, polyp in middle fossa of the nose growing from the lip of the unciform groove; *B*, bristle passing through the maxillary ostium beneath the middle turbinate.

* Exhibited before the Section on Oto-Laryngology of the Philadelphia College of Physicians, and the Philadelphia Pathological Society.

The ethmoidal sinuses, opened from the orbital aspect, are seen to be uninvolved.

A point of interest in Figure 2, which, however, has no relation to the foregoing, is this: The sphenoid sinus in this case is represented by a very small depression on the back wall of the nasal cavity (hidden in the illustration) while the space below the sella turcica, usually occupied by the sphenoid sinus, consists of a thick mass of cancellated bone. The cavity shown in this region is not the sphenoid sinus, but was made artificially with the curet in searching for it. It is comforting to the surgeon working in this region to know that when the sphenoidal sinus is absent its territory is usually occupied, as shown in Figure 2, by a thick mass of bone.

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CEREBROSPINAL EXAMINATIONS IN "CURED" SYPHILIS

CASES IN WHICH THE BIOLOGIC METHOD AS A CONTROL HAS BEEN USED *

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Since the application of the Wassermann reaction to the blood-serum as a biologic control in the treatment of syphilis, we have rested securely in the thought that this method of management, if applied correctly, was the last word in the prognosis of this disease. All authorities have recommended it as the most dependable aid which we have in the control of our treated cases of syphilis, and truly it is; but as discovery after discovery has followed in quick succession, each marking an epoch in our knowledge of syphilis, it is but natural that our opinions should change.

Noguchi's[1] demonstration of the *Spirochaeta pallida* in the brains of paretics has opened up a new phase of the infection, and whereas we before thought that this localization was only the end-result of the infection, we now know differently. That the spirochetes involve the central nervous system early, in a large percentage of cases, was little dreamed of three years ago, and only within the last year and a half has the management of this class of infections been given serious thought by the average syphilographer.

Since the application of lumbar puncture with spinal fluid examinations, many cases showing a negative blood-serum Wassermann for from eighteen months to two years without treatment show subarachnoid involvement. In the light of our present knowledge, lumbar puncture with spinal fluid examinations is demanded in all cases of syphilis, no matter at what stage of the disease, as a control on future complications of the nervous system.

An apology is offered for referring to the diagnosis of syphilis at the time of the presence of the primary lesion, as every syphilographer knows exactly the value of an early diagnosis, especially before the Wassermann is positive; but ever since the arrival of the easy water-soluble neosalvarsan, the treatment of this disease has passed out of the hands of the specialist into the hands of everybody with a medical degree. It is safe to prophesy that our insane hospitals in the future will contain a larger percentage of cases with involvement of the central nervous system than they do to-day. Too little heed is paid to this golden opportunity, and too great a dependency is placed on a few ill-timed "shots" with no consideration whatever of the subarachnoid space.

Since October, 1913, I have performed lumbar puncture with spinal fluid examinations on as many patients "biologically cured" as I could induce to return for examination. Of these so-called "cured cases," excluding syphilis with cerebrospinal manifestations, I have found spinal fluid involvement in 18.3 per cent. Many patients resting securely in the faith of a persisting negative Wassermann and good health refused to permit this procedure.

DISCUSSION OF THE TABLE

The accompanying table shows 6 cases of primary syphilis, 18 of secondary syphilis, 4 of tertiary syphilis, 14 of latent syphilis, 1 of congenital syphilis, and 6 of syphilis with cerebrospinal manifestations; of the last 6 cases, 2 are of incipient tabes, 1 of tabes, 2 of cerebrospinal syphilis and 1 of complete optic atrophy.

The original object of this investigation was to ascertain whether or not the "cure" had been complete and if not, the reason.

Mott[2] long ago called attention to two factors which play a rôle in the involvement of the nervous system: (*a*) the specific form of spirochete, and (*b*) poor resistance on the part of the host. Having studied these cases with this idea in mind, I have deduced the conclusions which are given below.

PRIMARY SYPHILIS

All the cases herein recorded went to a satisfactory termination, and I believe are permanently cured. The largest quantity of salvarsan given to a single patient, together with rubbings, was 4.2 gm.; the smallest was 2.4 gm.

SECONDARY SYPHILIS

In Case 8 the patient, D. H. D., of average nutrition, had been infected nine years, and spirochetes were demonstrated in the mouth lesions before treatment was begun. On account of the length of infection before treatment, the patient being a confirmed alcoholic, subarachnoid involvement might be suspected. Examination was negative.

In Case 9 the patient, H. R. A., aged 38, was strong and robust, and spirochetes were present after five years. Jan. 27, 1914, spinal fluid examination was positive. After intensive intravenous salvarsan, spinal fluid examination April 29, 1914, showed Wassermann negative, cells 3 per cubic millimeter, Nonne negative. The total quantity of salvarsan given was 4.5 gm.

Patient 10, G. K. L., aged 51, was very well preserved. There was cerebrospinal involvement at eighteen months. This patient has had fourteen injections of salvarsan intravenously, being a total of 7 gm., together with rubbings by a professional, and four injections intraspinally, one after the Swift and Ellis[3] technic, 20 c.c. of serum being given, and three after the method of Ravaut,[4] 4 mg. being given at each injection. The spinal fluid is still involved.

Patient 11, C. G., aged 28, strong and vigorous, came under observation during the secondary period. The blood Wassermann always vacillated; spinal fluid examination, December, 1913, was positive, Nonne positive, and lymphocytes 25 per cubic millimeter. Since severe persistent intra-

* Read before the Section on Dermatology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

1. Noguchi, Hideyo: The Transmission of Treponema Pallidum from the Brains of Paretics to the Rabbit, The Journal A. M. A., July 12, 1913, p. 85.

2. Mott: In Power and Murphy's System of Syphilis, Oxford Press, 1908, ii, iv.

3. Swift and Ellis: New York Med. Jour., 1912, xcvi, 53.

4. Ravaut: Ann. de méd., 1914, i, 49.

venous medication, spinal fluid examination, March 24, 1914, revealed Wassermann negative, Nonne positive, and lymphocytes 3 per centimeter. Total quantity of salvarsan injected was 8.55 gm.

Patient 13, E. G. M., aged 24, was in good physical condition after two years' treatment, including five injections of salvarsan and mercury rubbings, the latter by a professional rubber, and showed a positive Wassermann on the spinal fluid. Later this patient received five intravenous injections at intervals of a week, making a total 5 gm. salvarsan. Second spinal puncture was refused.

In cases 14 and 15 (man and wife), each was treated differently; both show negative spinal fluid examination.

Patient 19, E. M. M., aged 28, robust and vigorous, had severe ulceration in larynx after four years. Spinal fluid examination is negative; blood Wassermann is still positive.

Case 23, F. E., is a reinfected case of syphilis, treated in 1911 for first infection, plaques and secondaries and positive blood Wassermann at this time. Patient since had negative blood Wassermanns Feb. 8, 1912, Feb. 4, 1913, Dec. 30, 1913. Second infection, exposed Feb. 15, 1914, secondaries with sore throat, May 22. Wassermann on blood-serum, positive. Spinal fluid examination negative.

was 13 years of age. At this time he had large gummas over both shins. Spinal fluid examination was negative.

SYPHILITICS WITH CEREBROSPINAL MANIFESTATIONS

Case 47 (N. DeH.) has a negative Wassermann; there have been two slight attacks of paralysis. The patient shows marked involvement of spinal fluid, and has been treated by the Swift and Ellis technic and Ravaut method.

Patient 49 (Mrs. E. S.), whose husband died of paresis, has occasional headaches, but is otherwise well. Wassermann is negative; there is enormous spinal fluid involvement. The patient has been treated with the Swift and Ellis technic and the Ravaut method.

Since beginning lumbar puncture with spinal fluid examinations I have made over 100 examinations.

Among some other cases that I have examined, three cases of secondary infection show involvement of the subarachnoid space; in three cases of latent infection with scarcely any treatment at all, spinal fluid examination is negative.

Considering the relation between the positive and

Fig. 1.—Dropping-glass, having the advantage of keeping the salvarsan excluded from the air at all times.

Fig. 2. — Converted syringe receptacle.

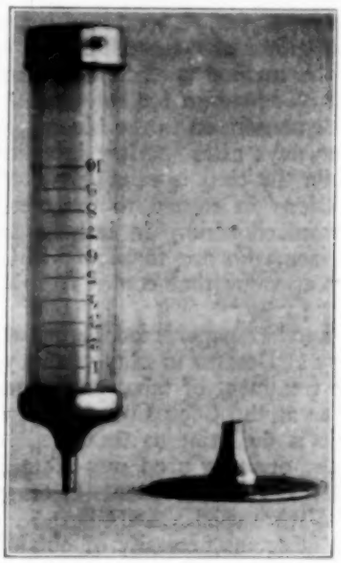

Fig. 3.—Record syringe with cap attachment.

TERTIARY SYPHILIS

Case 26, M. H. O., average weight 105 pounds, is the only patient in this series who showed involvement, and she is the wife of H. O., Case 36 under latent syphilis. Both show positive Wassermann on the spinal fluid.

Case 27 (M. D. H.) strong and vigorous, with a gumma on neck, was infected sixteen years before any treatment was begun. Spinal fluid is negative. One would suspect positive here.

LATENT SYPHILIS

Cases 30, 31, 37 and 38 are all cases of neglected treatment, in which one would suspect positive spinal fluid tests. All are negative.

Case 40 (F. O. B.) after provocative salvarsan shows positive blood and spinal fluid Wassermann.

Case 41 (Mrs. E. A., wife of E. A.) shows marked involvement of spinal fluid. I was unable to obtain husband's spinal fluid, at this time, but he is extremely irritable and spinal fluid involvement is possible.

CONGENITAL SYPHILIS

One would certainly suspect infection in Case 43 (H. H.), as treatment was not begun systematically until the patient

negative spinal fluid examinations in the marital infections alone, one would be strongly suspicious of a specific spirochete. That poor resistance on the part of the host plays a rôle in all infections is an absolute certainty, but who is going to point out the "weak"? I am sure I am not able to in my little experience.

That all infections with the *Spirochaeta pallida* are not potentially in the subarachnoid space should be readily conceded. Flexner[5] has compared infections of this space with those of anterior poliomyelitis and those of pneumococcic origin. He shows clearly the futility of systemic medication in the latter infections. While the same holds true, in a measure, with syphilis, we are dealing with an infection that is slower in its progress, and as a consequence, our method of attack need not be so heroic at first. It is a mistake to begin injecting, intraspinally at the onset, every case of early syphilis in which there is spinal fluid involvement without symptoms.

5. Flexner, Simon: The Local Specific Therapy of Infections, THE JOURNAL A. M. A., Nov. 22, 1913, p. 1873.

The recent experiments with vital stains,[6] trypan red and blue, show that it is possible to find these substances in the subarachnoid space after intravenous medication, as well as intraspinal injections, only in the latter it is more diffused and intense. For this reason I have preferred to adopt at first an intensive intravenous form of treatment, when no particular clinical manifestations are demonstrated, withholding intraspinal injections for the more severe and stubborn cases.

TREATMENT

The two methods of treatment available are intensive intravenous injections and intraspinal medication. In intensive intravenous injections, the plan which I have adopted is to give, in the early cases, as suggested by Collins,[7] from five to seven doses of 0.5 to 0.4 gm. weekly, and then to rest three or four weeks, at the end of which time a puncture is made. If this shows a negative reaction, the treatment is resumed every other week for the same period of time, later once a month for three months, and still later, every other month. If a negative spinal reaction is maintained for a year, all treatment is suspended, but spinal examinations are recommended every six months. That this method is efficient is shown by examination of the blood-serum for salvarsan. Frequently it has been demonstrated in the blood-serum by the Abelin[8] test ten days after the last injection.

While the time is relatively short to draw definite conclusions in regard to the merit of injections of salvarsanized serum, in intraspinal medication, most physicians who are familiar with the method realize the great value that comes from this form of treatment.

In another paper read before the Illinois Medical Society at Decatur in May of this year, my experience in the treatment of tabes on the service of Dr. Julius Grinker at the Cook County Hospital is given. The technic is the same as that used by Swift and Ellis, only the quantity used was from 15 to 20 c.c. undiluted with saline solution. Often pooled homologous serums were used.

Realizing the necessity of obtaining an equally efficient, as well as more rapid and simple means of medication, I have adopted the method of Ravaut as recommended by Wile,[9] for direct intraspinal injections of neosalvarsan.

I dissolve 0.15 gm. of neosalvarsan in 5 c.c. of water (a hypertonic solution) in the dropping-glass (Fig. 1). This has the advantage of having a glass stopper and lessens the exposure to air.

A spinal puncture is made and the fluid is collected into the converted syringe receptacle (Figs. 2 and 3) up to 5 c.c.; the mandrin is reinserted to stop the flow, the desired dose is dropped into the syringe, the piston is placed in position, the syringe is inverted, fluid shaken up, the mandrin is withdrawn, connection made and the fluid reinjected. In following out the method, I have followed the practice of giving salvarsan every fourteen days intravenously, to take care of any possible systemic infection that might be present.

6. Tilney, F.: Long Island Med. Jour., 1914, viii, 121. Schnaudigel, O.: Arch. f. Ophth. (von Graefe's), 1913, lxxxvi, 93.
7. Collins, Joseph: Syphilis and the Nervous System, The Journal A. M. A., Sept. 13, 1913, p. 860.
8. Abelin: München. med. Wchnschr., 1912, lix, 81.
9. Wile, Udo J.: The Technic of the Intradural Injections of Neosalvarsan in Syphilis of the Nervous System, The Journal A. M. A., April 11, 1914, p. 1165.

CONCLUSIONS

1. Too little attention is still paid to the diagnosis of syphilis at the time of the presence of the primary lesion.
2. A great majority of physicians fail to realize the golden opportunity that an early diagnosis presents.
3. Control of the treatment by the biologic examination of the blood-serum must be supplemented by spinal fluid examinations.
4. Intensive intravenous injections should always be tried first, in early cases, before intraspinal injections are resorted to.
5. Based on clinical observation, there is a strong possibility of a specific spirochete for the nervous system.

ADDENDUM

Since making the foregoing report at the session of the American Medical Association at Atlantic City in June, four out of seven cases under treatment show the following: One case with cerebrospinal fluid involvement, without symptoms, after 2 mg. of neosalvarsan injected according to the Ravaut technic as described above, showed bladder paralysis which still persists after six weeks; one case of tabes shows marked incoordination with marked numbness and anesthesia of the lower extremities; another patient with tabes is unable to walk at all; numbness and anesthesia are markedly increased; a fourth case shows the same symptoms, but, under strychnin, 1/60 grain three times a day, the patient has improved somewhat.

In the last three cases, the dose given was always 0.004 mg. and no symptoms appeared until after the third injection, the injections being made at intervals of two weeks.

In view of this later experience, which is somewhat comparative, I believe that the Swift and Ellis technic is superior and should be adhered to. If the Ravaut method is to be used at all, the dose should be extremely small and should be dissolved in at least 15 c.c. of spinal fluid.

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THE TREATMENT OF SYPHILIS OF THE NERVOUS SYSTEM*

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While it was recognized soon after syphilis became pandemic that the nervous system played a part in the morbid process, it appears that Knorre was the first, in 1849, to call attention to the fact that paralyses might occur in constitutional syphilis soon after or synchronously with the earliest symptoms. He cited five cases in three of which paralysis occurred three months after infection. Since then numerous publications by neurologists and syphilologists have appeared giving clinical evidence of the early involvement of the nervous system. Nonne[4] has observed cerebral syphilis developing four months after infection and

* Read before the Section on Dermatology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.
* On account of lack of space this paper has been abbreviated for The Journal. It will appear in full in the Transactions of the Sections and in the author's reprints.
4. Nonne: Syphilis and the Nervous System, translated by Ball, 1913.

mentions a case occurring simultaneously with the roseola. Leudt reported brain lues in two old persons three months after the appearance of the initial lesion. Mott[5] has observed meningitis even before the primary sore was healed, and he is sponsor for the statement that the most severe cases of brain and spinal syphilis occur within the first twelve months. Naunyn collected 209 cases from the literature, to which he added forty-five of his own. From his analyses he came to the conclusion that infection of the nervous system took place in the majority of instances during the first year, after which there was a decrease in frequency. Braus' statistics, made up of 100 cases in which a history was obtainable, showed that in nearly one-half the nervous system was involved within the first year. In Fournier's clinic twenty-six cases were shown to have developed within from three to six months after infection. Hutchinson's fifteen cases of spinal syphilis appeared from six months to three years after infection, while Savard found that out of seventy-seven cases of myelitis, twenty-six appeared from six to eight months after the chancre. These observations on the clinical side have been considerably augmented during the past few years by laboratory findings.

In 1903 Ravaut[6] undertook a systematic examination of the spinal fluid in secondary syphilis and found abnormal changes in about 70 per cent. of the cases. At the same time he made note of an apparent parallelism between the type of cutaneous eruption and the findings in the spinal fluid, having been impressed by the more frequent occurrence of abnormalities with papular, pigmentary and psoriasiform lesions than with the roseola. Plaut[7] also obtained a rather high percentage; namely, a definite pleocytosis in one-third of the cases and border-line results in another third, leaving only one-third negative. Nonne and Mantoux placed their positive findings at 40 per cent. From the examinations of Altmann and Dreyfus,[8] chemocytologic changes were present in about 80 per cent. of patients in the secondary stage with remains of the initial lesion. Gennerich[9] found positive findings in about 90 per cent. He is of the opinion that all early constitutional cases, that is, those in which the Wassermann has become positive, will after an injection of salvarsan or mercury develop an increase in lymphocytes and globulin. In other words, a provocative or Herxheimer reaction will be obtained in the fluid. This concurs with the studies of Ravaut, Levy-Bing, Duroex and Dogny. Altmann and Dreyfus made similar observations. One of their cases in the initial stage with a negative blood and spinal fiuid showed, sixteen days after treatment with 1 gm. salvarsan, fifteen cells. Another with a negative blood and fluid sixteen days after 1.4 gm. salvarsan had a marked increase in pressure. Two months later, during which time an additional 1.5 gm. had been given, twelve cells were found. Another patient in the early secondary stage with normal fluid was given 0.4 gm. salvarsan. Seven weeks later the patient had facial and acoustic paralysis with 180 cells and a strongly positive Wassermann. This was a characteristic neurorecidive, a number of which cases were reported early in the salvarsan era, but are no longer met under our more intensive methods of treatment.

5. Mott: A System of Syphilis, iv.
6. Ravaut: Ann. de derm. et de Syph., 1903, iv, 1.
7. Plaut, Rehm and Schotmüller: Leitfaden zur Untersuchung der Zerebrospinalflüssigkeit, Fischer, 1913.
8. Altmann and Dreyfus: München. med. Wchnschr., 1913, Nos. 9 and 10, pp. 464 and 531.
9. Gennerich: Die Liquorveränderungen in den einzelnen Stadien der Syphilis, Berlin, Hirschwald, 1913.

My own investigations up to the present time do not coincide with the high percentage of anomalies reported by other observers. In the absence of clinical symptoms pointing to involvement of the central nervous system in the early secondary stage, I have found abnormalities in the spinal fluid in less than 20 per cent. The headaches of the early secondary period are frequently unattended by changes, and appear to be due to a hypertension rather than a meningitis. In the later secondary and tertiary periods the cephalalgia is accompanied more usually by a lymphocytosis and other findings and is the precursor of cerebral accidents. I still have this subject under investigation and will report on it later. My view at this time, however, is that too much importance has been attached to trivial changes, as differences in pressure or slight increase in globulin, and that probably no larger percentage show marked anomalies than later develop definite nerve changes. That such cases may be the subject for years of a chronic meningitis without objective signs has been shown by the researches of Vincent,[10] who was able to follow for a number of years patients with marked fluid changes and no clinical symptoms, who later developed severe organic changes in the central nervous system, some paresis. It therefore seems probable that cases of syphilis of the nervous system are recruited from those with a chronic meningitis or latent residua, for we know that the older the infection becomes the greater is the tendency to localization or tertiarism. Whether or not a new infection or dissemination of spirochetes can take place from an old focus we must submit for future enlightenment. In this connection may be mentioned the positive inoculation obtained by Uhlenhuth and Mulzer[11] in a rabbit with the blood of a woman with latent syphilis, who had been delivered shortly before of a syphilitic child. Her infection dated back four years.

Clinical observations have taught us that only a minority of syphilitic individuals develop obtrusive nervous symptoms. Even under the old and inadequate methods of treatment the percentage is not very high. This may be accounted for partly by less complete methods of diagnosis, as the majority of statistics were compiled before the application of the Wassermann reaction or the lumbar puncture. Hjelmann placed his figures of cerebral syphilis at from fifteen to twenty-five per thousand. Raumont found that of 3,400 cases, 290 suffered from syphilis of the nervous system. Fournier's investigations of 4,329 cases of tertiary syphilis elicited diverse nervous manifestations in 1,085, of which 416 showed involvement of the cerebrospinal axis with more or less diffuse lesions. Pick and Bandler followed the fate of 2,066 cases in the Prague clinic between the years 1879 and 1899 and found that 4.25 per cent. had developed parasyphilis. Most valuable are the statistics of Mattauschek and Pilcz.[12] In an admirable and painstaking manner they investigated the course of the disease in 4,134 officers in the Austrian army who had been infected during the years 1880 to 1900, and found that 198 developed paresis and 113 tabes, not counting those who later became paretic. Of the total number of tabetics 11.93 per cent. developed paresis; 8.18 per cent. had optic atrophy, not including the cases of

10. Vincent: Des méningites chroniques syphilitiques, thèse, 1910.
11. Uhlenhuth and Mulzer: Beiträge zur experimentelle Pathologie und Therapie der Syphilis mit besonderer Berücksichtigung der Impf-Syphilis der Kaninchen, 1913.
12. Mattauschek and Pilcz: Ztschr. f. d. ges. Neurol. u. Psychol. 1913, xv.

taboparesis; 132 patients suffered from cerebrospinal lues, most frequently the endarteritic form, and eighty other cases showed various psychoses.

Dreyfus examined 104 patients with latent syphilis, none of whom had symptoms pointing to involvement of the central nervous system. He found 77 per cent. normal. Of the remaining 23 per cent., only 12 per cent. showed marked changes. Inferring that the majority of patients suffer from meningeal involvement at the beginning of the infection, we must also infer that in a large percentage, cure takes place in spite of lack of or insufficient treatment, for in the cases under discussion Dreyfus mentions that treatment had been only symptomatic and far from adequate according to our present notions.

This leads us to another angle of the problem, namely, the question of "lues nervosa." It has long been the belief of syphilologists and neurologists that in nerve syphilis we are dealing with a different form of the infection. This had its origin in the observation of conjugal and family groups of metasyphilis as well as in persons infected at a common source. The question has been whether the factors which determine the later development of nervous syphilis reside in the infecting agent or in the host. Nichols[13] has recently expressed the opinion that such spirochetes possess a highly invasive power rather than a neurotropic action. His deduction rests on the results he obtained with a strain isolated from the nervous system. He found that they had a thicker form and a shorter incubation period, producing in rabbits hard lesions with necrotic centers and showing a tendency to generalize with lesions of the skin and eye, following local inoculation of the scrotum and testicle. Steiner's experiments with rabbits showed that in only a few cases the nervous system is involved, in some the lesions are in the brain, in others in the cord. Dörflein's work with the spirochetes of relapsing fever is perhaps also pertinent in showing that species, geographically separated, possess different biologic properties which are not distinguishable morphologically.

I have many times noted the involvement of the nervous system coincidently in husband and wife, and have at present under observation a woman with cerebrospinal syphilis whose husband had a paraplegia, a man with paresis whose child had hydrocephalus and a couple with taboparesis. Fischer[14] found among 500 paretics conjugal metasyphilis in 10.2 per cent. In Fischler's[15] analysis, husband and wife had general paralysis 26 and tabes 31 times; the husband tabes and the wife paresis 4 times, vice versa 15 times; both cerebrospinal syphilis 4 times; husband tabes and wife cerebrospinal syphilis once, and husband paresis and wife cerebrospinal syphilis once. Of the hereditary cases he found that when one parent had paresis the child had paresis 12 times and tabes 5 times. When one parent had tabes the child had tabes 10 times and paresis 3 times. It has been noted that when the types of conjugal metasyphilis are dissimilar, the man more often suffers from paresis and the woman from tabes.

Experience has demonstrated that many luetic affections of the nervous system are amenable to the treatment ordinarily employed, that is, mercury by injection or inunctions or by a combination of mercury with potassium iodid internally. The lesions which are responsive to treatment of this kind are certain types of endarteritis, localized gummas, periostitis involving the meninges and disseminated forms of meningitis. There are, however, some forms of gummas and chronic meningitis with severe headaches and endarteritis with symptoms, such as irritability, loss of memory, and inability to concentrate, which do not yield to the old treatment, as well as the types of syphilis formerly described under the names of parasyphilis or metasyphilis. The latter were so resistant to treatment that it had long led to the belief that they were only indirectly related to the infection—rather the result than the direct effect of the action of the organisms. The investigations of Noguchi and Moore demonstrating the presence of spirochetes in the lesions of paresis and tabes have, however, definitely placed these so-called parasyphilitic affections among the active lesions of syphilis.

In the treatment of syphilis of the nervous system the important points to emphasize are first, accurate diagnosis with serologic findings, second, necessity of prolonged treatment, third, the avoidance of too large initial doses until the susceptibility of the patient has been determined, and fourth, persistence in treatment in spite of absence of amelioration following the first few injections.

The criticism of the results of treatment of the nervous system by writers who have noted no improvement or an aggravation of symptoms depends on the superficial way in which it has been carried out. No judgment can be rendered until patients have been subjected to a sufficiently long treatment to influence permanently the pathologic changes in the cerebrospinal fluid. They must be kept under continuous observation for a period of years, and until the four phases of Nonne have become negative, no assurance can be given against relapses. In other words, since the infection of the nervous system is more difficult to reach, and hence more persistent, the treatment should be carefully controlled not only by clinical results but also by lumbar puncture. We cannot form any conception of the activity of the process from the symptoms alone. The latter sometimes are out of all proportion to the laboratory findings. There are at present under my care two patients in both of whom the only complaint was headache and a feeling of malaise. In the one a cell-count of 314 with double plus globulin and positive Wassermann to 0.2 cc. was found. In the other there was present a pleocytosis of 746 cells, a great excess of globulin and a positive reaction to 0.025 c.c.

It is not possible at present to give a characteristic serologic picture for cerebrospinal lues, tabes and paresis. Bearing in mind that there are transitional or border-land forms, it is necessary to supplement laboratory findings with careful and minute clinical examinations. To obtain a proper conception of the serologic findings in early tabes, repeated examination of the fluid should be made in all patients presenting symptoms pointing to involvement of the nervous system. Many cases of tabes give a previous history of oculomotor paralysis, facial palsy, headaches, somnolency, irregularity of the pupils or other evidence of meningitis of the base. In other cases in which the process is limited to the lower cord, these early symptoms are lacking. With the acquisition of further data we may be able from a group of symptoms and spinal fluid findings to foretell the subsequent development of tabes. Gummas or endarteritic changes in the nervous system frequently occur, but recovery takes place

13. Nichols, Henry J.: Jour. Exper. Med., 1914, xix, No. 4.
14. Fischer, Oscar: Ztschr. f. d. ges. Neurol. u. Psychol., 1913, xvi.
15. Fischler: Deutsch. Ztschr. f. Nervenheilk., 1905, xxviii.

without secondary tabes or paresis, while cases with meningitis of the base may be followed by either of these conditions. The closer these conditions are studied from a serologic and anatomic point of view, the less likelihood is there that they are due to a primary neuron degeneration. Nonne[16] is of the opinion that they are the result of a meningitis and refers to the work of Schröder, Meyer and Oppenheim demonstrating inflammatory changes in the pia and connective tissue passing from it to the blood-vessels. Nageotte also found a true inflammation with lymphocytes and plasma-cell infiltration about the root-fibers, as well as inflammatory changes in the arteries and veins. Stargardt likewise demonstrated a true inflammation of the sheath and endoneurium of the optic nerve in cases of tabes and paresis. It is possible for the specific infection to be limited to the cerebrospinal fluid, the blood being entirely free from the infection. This is proved by the negative findings in the blood and the positive ones in the fluid. It has also been demonstrated that the interchange between the blood and the spinal fluid is so slight that drugs introduced by the blood-stream diffuse themselves very little if at all in the spinal fluid. This fact explains the resistance of certain types of syphilis to the ordinary methods of treatment. Why this is so in one case and not in another is difficult to explain, unless we assume a more pronounced endarteritis in one case than in another or greater permeability of the choroid plexus. No matter what the theoretical considerations are, practical results show that the cells and other abnormalities can be influenced by intravenous treatment, although this takes place more slowly than with the direct method. That the latter is not only local in its action is shown by the change of a positive to a negative reaction in the serum by the exhibition of this treatment only.

The intraspinal method has placed the treatment of syphilis on a more accurate and scientific basis. As first applied by Swift and Ellis,[17] it consisted of injecting into the subarachnoid space salvarsanized serum, that is, the serum from a patient treated intravenously with the drug one hour before. Diluted with normal saline it is given in strengths varying from 40 to 100 per cent. This method has been modified by Dr. Hanson S. Ogilvie by incorporating salvarsan with human serum direct *in vitro,* and has the advantage of standardizing the dose. For the procedure his technic is as follows:

> Fifty c.c. of blood are drawn into a centrifuge bottle and centrifuged twice. It is important to have the serum clear and free from fibrin and blood-cells. To obtain the requisite amount of the drug, old salvarsan is mixed in the usual way in the proportion of 0.1 gm. to 40 c.c. of fluid, care being taken not to over alkalinize; 0.4 c.c. of this solution is the equivalent of 1 mg., and is taken as the standard for measuring the dosage. For this purpose a 1 c.c. pipet graduated in hundredths should be employed. The desired amount of salvarsan is added to from 12 to 15 c.c. of the serum, shaken to and fro to mix thoroughly, and then placed in the incubator at 37 C. (98.6 F.) for one hour, after which it is inactivated for half an hour at 56 C. (132.8 F.). The latter is a most important step in the technic, as Swift and Ellis demonstrated that the spirocheticidal properties of the serum were markedly increased by heating.

In experimenting with trypanosomes, Stühmer[18] found that the curative action of unheated salvarsanized serum lasted twenty-four hours, and its protective action forty-eight hours, while in the heated serum the curative action was still present at the end of three days and the protective action four days. In comparing the relative values of salvarsan and neosalvarsan, he found that whereas the former was still active after forty-eight hours and often seventy-two hours, neosalvarsan lost its parasiticidal powers after twenty-four hours.

Salvarsanized serum prepared according to the method of Ogilvie must be used fresh, that is, within three hours of the time that it is made up. Patients should be prepared for its administration as for the intravenous injection, with a laxative the night before and only a light meal two hours prior to the treatment.

A lumbar puncture is made and an amount of fluid equivalent to the amount introduced is withdrawn. While the needle is *in situ,* the barrel of a Luer syringe is connected by means of a piece of rubber tubing. Spinal fluid is allowed to fill this to expel the air and the serum is then permitted to flow in by gravity. After its administration the patient should lie flat without any pillows, the foot of the bed being elevated for several hours. He must be kept in bed for at least twenty-four hours, in some cases forty-eight or seventy-two hours. Failure to do this may result in unpleasant symptoms, as pain in the extremities, headache, anesthesia, and bladder and rectal paresis.

The proper dose is still in a stage of evolution and a note of warning must be sounded against employing too large amounts. From my experience during the last months I feel that the limits of safety lie within 0.5 mg. It is better to begin with a dose of 0.25 mg., repeating or gradually increasing according to the tolerance of the patient. The intervals should be two weeks or longer. In a number of patients, when larger doses were given and the intervals were only a week apart, unpleasant by-effects were noted. These may come on within a few hours or be delayed for six days and may persist several weeks. The symptoms consist of root-pains, numbness, bladder and rectal paresis in some, irritability of the bladder in others, and ataxia. The numbness in some cases involved the whole lower portion of the body, in others the gluteal region and the legs with areas of hyperesthesia on the inner thighs.

On the Continent, where neosalvarsan is employed intraspinally, Marinesco and Minea[19] and Ravaut[20] have given as much as 12 mg. at a dose. These large doses were followed in a number of cases by severe reactions.

On account of the technical difficulties connected with subarachnoid injection it is well to inaugurate the treatment of nerve syphilis with a few mercurial injections and follow this up by a course of intravenous injections of salvarsan, beginning with a dose of not more than 0.25 or 0.3 gm. and repeating these injections at varying intervals of from one to two weeks. At the end of six or eight such injections lumbar puncture should be repeated; and if a marked effect has not been obtained either clinically or serologically, a course of intraspinal injections should be seriously considered, the number and intervals to be governed by the reaction produced. Should at any

16. Nonne: Die Lues-Paralyze-Frage, Arch. f. Derm. u. Syph., 1914, cxix, 215.
17. Swift, H. F., and Ellis, A. W. M.: Jour. Exper. Med., 1913, xviii, No. 4; The Treatment of Syphilitic Affections of the Central Nervous System with Especial Reference to the Use of Intraspinous Injections, Arch. Int. Med., September, 1913, p. 331.
18. Stühmer: München. med. Wchnschr., 1914, No. 14, p. 745; ibid., 1914, No. 20, p. 1101.
19. Marinesco and Minea: Bull. de l'Acad. de méd., Feb. 2, 1914.
20. Ravaut: Ann. de Méd., 1914, No. 1, p. 49.

time symptoms of irritation manifest themselves, the patient should rest until they entirely disappear.

In the types of disease in which the symptoms are urgent and an immediate effect is desired, there can be no objection to beginning the intraspinal treatment without the antecedent intravenous employment of the drug, but better results are obtained by combining the two routes of medication. It must be borne in mind that a definite plan of treatment has not yet been formulated but that we are in a state of developing a method which seems to offer far more hope of influencing these resistant forms of syphilis of the nervous system than any heretofore employed.

Cases of tabes which are rather acute in their development, and have a high pleocytosis and positive Wassermann are advantageously treated by the combined use of mercury with the method outlined. In those accompanied by marked degenerative changes mercury may hasten the process. It therefore must be employed only after a careful analysis of the symptoms and serologic findings. An indication for intraspinal treatment alone would seem to be present in those cases in which we have a negative Wassermann in the blood and a positive one in the cerebrospinal fluid.

As I believe the results obtained with neosalvarsan are inferior to those obtained with salvarsan, I have practically given up the use of the former. It has been shown by Stühmer that, owing to its quicker elimination, its action is much shorter than that of salvarsan. While in each the maximum effect is produced within the first twenty-four hours, it practically ceases on the second day in the case of neosalvarsan, whereas in the case of the old he still found active traces at the end of a week.

The following group of cases is submitted to show the effect of intravenous and of intraspinal medication. Many of the patients had been treated for long periods of time by mercury and potassium iodid without improvement, and while the results are not uniform in all cases, in a number the improvement in the clinical and serologic symptoms is so striking as to encourage us in the further development of the method.

Case 1.—Tabes. Man, aged 40, married, salesman. Syphilis eight years ago.

Symptoms: For one year pains in the legs, girdle sensation and marked ataxia. Absent reflexes; Argyll Robertson pupils.

Cerebrospinal Fluid; March 11, 1913: Cells 70, globulin ++, Wassermann ++ to 0.4 c.c.; serum ++.

Treatment: From March to June, eight injections of neosalvarsan, totaling 5.7 gm., and weekly injections of salicylate of mercury. No benefit resulted and treatment was discontinued. From Sept. 5 to Oct. 11, 1913, four injections of salvarsan amounting to 1.6 gm. Condition showed no change. Nov. 21, 1913, he was given an intraspinal injection of a 40 per cent. exogenous salvarsanized serum fortified with 0.25 mg. salvarsan. The effect of this treatment was cessation of the girdle-pains. Subarachnoid injections were continued until the middle of April, when he received the eighth with 1 mg. of salvarsan.

Cerebrospinal Fluid; April 16, 1914: Cells 0, globulin —, Wassermann ++ to 0.4 c.c.; serum ±.

Clinically a most radical change had taken place. The patient's nutrition had improved, he had gained in weight and no longer suffered from pain. The improvement in his gait was marked and he was able to go about unassisted.

Cerebrospinal Fluid; May 29, 1914: Cells 0, globulin —, Wassermann ++ to 0.8 c.c.; serum ++.

Treatment: Two intraspinal injections of 3 mg. and 3.5 mg., respectively. The latter was followed by severe root-pains.

This case is a very striking illustration of the value of subdural treatment, as there was absolutely no amelioration in the symptoms from the other forms of treatment but a steady progression. Attention is called to the benefit obtained from the small doses and the error made in the large increase.

Blood-serum examined June 10, 1914, ——.

Case 3.—Tabes. Man, aged 55, married. Syphilis, 1901. Symptoms of tabes since 1906.

Treatment: From 1906 to 1912 injections of mercury. From April to October, 1912, six injections of salvarsan.

Cerebrospinal Fluid; Oct. 19, 1912: Cells 87, globulin ++, Wassermann ++ to 0.6 c.c.

Treatment: Three injections of neosalvarsan during the next year.

Cerebrospinal Fluid; Oct. 28, 1913: Cells 97, globulin ++, Wassermann ++ to 0.2 c.c.

Treatment: Five injections of neosalvarsan; Feb. 9, 1914, 0.5 mg. and March 10, 1914, 0.75 mg. salvarsan intraspinally.

Cerebrospinal Fluid: Cells 7, globulin ++, Wassermann ++ to 0.1 c.c.

Clinically: Improvement after intraspinal treatment marked. The pains in the legs disappeared, the patient no longer suffered from insomnia which had troubled him for many months and in every way his condition improved. This case also emphasizes the necessity of systematic and energetic treatment, as shown by an intensification of the process revealed by puncture under an irregular treatment of only three injections of neosalvarsan during the year.

Case 6.—Tabes. Man, aged 55, married, broker. Syphilis twenty-six years ago with mild secondary eruption.

Symptoms: For past ten years pains and unsteady gait. During past year double vision, paralysis of the right external rectus, slight facial paralysis and attacks of vertigo. Knee-jerks absent; Romberg; pupils small, fixed to light and irregular outline, atrophy of the right nerve.

Cerebrospinal Fluid: Cells 45, globulin ++, Wassermann ++ to 0.4 c.c., serum Wassermann weakly +.

Treatment: From Feb. 16 to March 26, 1914, weekly injections of salvarsan averaging 0.3 gm. Early in April the patient had several attacks of motor weakness in the legs accompanied by temporary loss of consciousness, visual disturbance and attacks of aphasia. These symptoms were probably due to endarteritis and change in blood-pressure. May 5 he was given an intraspinal injection of 1 mg. of salvarsan, which was followed by retention of urine and vomiting lasting several days. May 14, 1914, 1 mg., May 20, 1.5 mg., and June 10, 0.5 mg. salvarsan were given subdurally.

Cerebrospinal Fluid: Cells 8, globulin ++, Wassermann —.

Clinically, the aphasia and motor weakness of the right upper extremity have disappeared, he is free from pain and his ataxia has improved some.

Case 7.—Tabes and optic atrophy. Man, aged 52, married. Syphilis twenty-eight years ago.

Symptoms: For past sixteen years pains in the legs. Several years ago diplopia. Knee-jerks absent; marked ataxic gait. Pupils small and immobile, optic nerves pale, the right more so. Vision, right, 18/200, left 18/50.

Cerebrospinal Fluid; March 31, 1913: Cells 150, globulin ++, Wassermann ++ to 0.8 c.c., + to 0.6 c.c.; serum —

Treatment: April 9, 1913, 0.45 gm. neosalvarsan, April 16, 0.6 gm. neosalvarsan. Latter was followed by increase in pain, diminished secretion of urine, delirium, and tremor of the hands, continuing until the 21st. From May 13 until June 23, six injections of neosalvarsan, a total of 2.85 gm., without any reaction.

Cerebrospinal Fluid: June 26, 1913: Cells 15, globulin +, Wassermann ++ to 0.2 c.c.

Treatment: Sept. 22, Sept. 29, Oct. 6 and Oct. 18, 1913, 30 c.c. of from 40 to 80 per cent. salvarsanized serum intraspinally, after the method of Swift and Ellis.

Cerebrospinal Fluid: Cells 8, globulin —, Wassermann —.

A period of rest followed this treatment.

Cerebrospinal Fluid; May 13, 1914: Cells 5, globulin ++, Wassermann very weak + with 1.0 c.c.; blood-serum very weak +.

Clinically, the pains have all gone, the ataxia is unchanged and the sight has remained stationary during the past year.

CASE 8.—Tabes. Man, aged 32, single. Initial lesion fourteen years ago; no secondaries.

Symptoms: Four years ago slight numbness of the toes. Six months later loss of coordination and now the typical symptoms of tabes.

Cerebrospinal Fluid: Cells 34, globulin ++, Wassermann ++ to 0.2 c.c.; serum ++.

Treatment: From Feb. 12 to May 5, 1913, ten injections of neosalvarsan, 7.1 gm., sixteen injections of mercuric chlorid, from 1/3 to 1/2 grain, and twenty-five inunctions.

Result: Marked improvement. The patient was stronger and had regained confidence, his walk had improved markedly and he was able to return to his work.

Cerebrospinal Fluid; June 2, 1913: Cells, 7, globulin —, Wassermann, —; serum —.

From that time until he presented himself again in March, 1914, he had had no treatment.

Cerebrospinal fluid, negative; serum ±.

There had been no clinical relapse except slight pains in the legs. Under a provocative injection of 0.3 gm. salvarsan, his blood-serum became strongly positive. After two more injections he was again punctured.

Cerebrospinal Fluid: Cells 5, globulin ±, Wassermann ++ with 1 c.c.

This case illustrates several points: first, the possibility of influencing the serologic findings along with the clinical symptoms by intense and regular treatment; second, the necessity of keeping patients under observation after negative findings are obtained, and third, the value of provocative injections. Since the latter the patient has had five intravenous injections of salvarsan, averaging 0.4 gm. each. He no longer suffers from pain, the bladder and bowels are normal, sexual power has steadily improved during the past year and there is scarcely any perceptible ataxia in his walk. When he first came under treatment his ataxia was so pronounced that he could not get about without assistance. He now walks daily from 5 to 7 miles, registered by a pedometer.

CASE 9.—Optic atrophy. Woman, aged 48, married, housewife. No history of infection; husband infected six years ago.

Symptoms: Five years ago double vision and other ocular disturbances. When seen in October, 1912, the patient had optic atrophy. Vision of the right eye 20/50; left, fingers at 4 inches.

Cerebrospinal Fluid; Oct. 16, 1912: Cells 24, globulin +, Wassermann ++ with 1 c.c., + to 0.6 c.c.

Treatment: Fourteen injections of neosalvarsan, 9 gm., and seven injections of salvarsan, 2.5 gm., accompanied by injections and inunctions of mercury.

A very noticeable improvement had taken place in the physical condition of the patient. All the headaches had ceased; the vision in the right eye was 20/20 and in the left fingers at 2½ feet.

Cerebrospinal Fluid; July 17, 1913: Cell 1, globulin —, Wassermann ++ with 1 c.c., and + with 0.8 c.c.; serum ++.

The benefit which this patient derived from treatment greatly exceeded the hopes of those familiar with this class of cases. The condition has been stationary for a year, without treatment, but the positive reaction of the spinal fluid and of the blood show the necessity of further combating the disease to hold the ground gained.

CASE 14.—Tabes. Man, aged 31, married, salesman. Syphilis nine years ago with secondaries.

Symptoms: Three years ago blurred vision and dilatation of left pupil. Now Argyll Robertson pupils; gastric crises; absent reflexes; slightly ataxic gait. Serum ++.

Treatment: In February, 1911, three injections of salvarsan, each 0.35 gm., followed by mercury.

Cerebrospinal Fluid; Oct. 10, 1912: Cells 43, globulin ++, Wassermann ++ to 0.4; blood-serum ±.

Treatment: Eight injections of neosalvarsan, 5.25 gm., along with mercurial treatment.

Clinically, the first two treatments were followed by a temporary improvement, but after several months there was a return of leg-pains, insomnia, loss of sexual power, weakness, etc. After the second course a definite change took place. The patient has gained in weight, the gastric crises and pains have ceased and his gait is normal.

CASE 15.—Taboparesis. Man, aged 38, married, manufacturer. Syphilis December, 1903, followed by secondaries. A marked cutaneous relapse in August, 1904; persistent eruption of the palms in 1905.

Symptoms: When seen in November, 1911, he had suffered from delusions of grandeur for two weeks. Eye-reflexes sluggish; knee-jerks absent.

Treatment: From Nov. 11, 1911, to Oct. 7, 1912, eleven injections of salvarsan, 4.2 gm., and seven injections of neosalvarsan, 4 gm., with mercury in the form of inunctions and injections.

Cerebrospinal Fluid; Oct. 10, 1912: Cells 86, globulin ++, Wassermann ++ to 0.2; serum ++.

Physical Examination. No sensory changes, station and gait normal. No paresthesia, no bladder or rectal trouble; both pupils very sluggish to light and accommodation. Mental examination negative except for a few obsessions with slight tendency to depression. No speech or writing defect.

Treatment: Injections of mercury to Jan. 31, 1913, and then discontinued.

Relapse: March 3, 1913 there was an epileptiform convulsion, and the patient was unconscious for twenty minutes. Nervous and excitable.

Treatment: Seven injections neosalvarsan, 4.65 gm., two salvarsan, 0.9 gm.

Relapse: In June, 1913, the patient became disoriented. Delusions and hallucinations both visual and auditory were very marked. He was extremely noisy and at times violent so that it was necessary to place him in a sanatorium and keep him under the influence of sedatives.

Treatment: July 16, 1913, an intraspinal injection of 30 c.c. of a 40 per cent. solution of salvarsanized serum after the method of Swift and Ellis; July 26, second injection; he became quieter and more tractable; August 4, third injection; distinct improvement the following week. He took his food and slept better, and grandiose ideas were less marked, but delusions of persecution persisted. August 14, fourth injection. After thirty minutes a mild convulsion. August 22, fifth injection. Steady improvement and only a tendency to be aggressive toward attendants and physicians. August 29, sixth injection. September 4, an intravenous injection of 0.45 gm. and on the following day an intraspinal injection. During the succeeding week a definite improvement in every way. He was brighter, had an insight into his condition, grandiose ideas practically disappeared and he was permitted to return to his home. Five more intravenous and five intraspinal injections were given.

Cerebrospinal Fluid; Oct. 21, 1913: Cells 6, globulin +, Wassermann ++ to 0.2 c.c. The first of the year he returned to business and during the month of February had one intravenous and one intraspinal treatment of salvarsanized serum.

Relapse: The latter part of March his brother died suddenly. This was followed by marked depression, insomnia and loss of weight.

Treatment: April 4, 1914, 0.75 mg. salvarsan subdurally; April 9, 0.4 gm. intravenously. April 23 the patient had a convulsion. April 25, 1.5 mg. intraspinally.

Cerebrospinal Fluid; April 25, 1914: Cells 15, globulin ++, Wassermann ++ to 0.05 c.c.

Treatment: May 12, 2 mg., May 22, 3 mg. intraspinally. The latter was followed by vesical incontinence persisting for several days.

Cerebrospinal Fluid: Cells 4, globulin ++, Wassermann ++ to 0.05 c.c.

Summary: Patient has received twenty-one injections of salvarsan, totaling 8.65 gm fifteen of neosalvarsan, 9.25 gm.,

thirteen intraspinal injections of salvarsanized serum varying in strength from 40 to 100 per cent. (Swift-Ellis method), and five intraspinal injections in dosage from 0.75 to 3 mg. salvarsan, besides several courses of mercury by injection and inunction. At present he is normal again excepting for slight mental indecision.

Case 18.—Cerebrospinal syphilis. Man, aged 29, single, clerk. Syphilis five years ago with secondaries.

Symptoms: Pupils sluggish, knee-jerks hyperactive, impotence for last two years.

Cerebrospinal Fluid; Feb. 2, 1913: Cells 46, globulin ++, Wassermann ++ to 0.6 c.c., ± to 0.4; serum —.

Treatment: Six injections neosalvarsan, 4.5 gm., six injections of salvarsan, 3 gm., and 100 grains of mercury salicylate from March 1 to June 1, 1913. This was followed by a period of rest to Nov. 4, 1913.

Cerebrospinal Fluid; Nov. 4, 1913: Cells 0, globulin —, Wassermann —.

This case shows the importance of lumbar puncture, for the blood was repeatedly negative and remained so under provocative treatment, as well as the effects of a concentrated therapeutic attack.

Clinically, the symptoms gradually improved.

Case 20.—Cerebrospinal syphilis. Man. A patient in the City Hospital. Syphilis three and one-half years ago.

Symptoms: For three weeks headaches and leg weakness; pupils fixed to light and accommodation. Patient also has multiple gummas of right leg.

Cerebrospinal Fluid: Cells 746, a very marked excess of globulin, the fluid coagulating almost solid, and a positive Wassermann to 0.05 c.c.

Treatment: Salvarsan, 1.5 mg. intraspinally; one week later the cell-count was down to 174 with a reduction in the globulin but no change in the Wassermann. The headaches were absent and the weakness in the legs had improved. After an injection of 3 mg. salvarsan intraspinally the cells dropped to 70, but the Wassermann was not influenced. The patient is now being systematically treated.

Case 22.—Cerebrospinal lues. Man, aged 58, married, manufacturer. Syphilis thirty-five years ago. Deafness twenty years ago.

Symptoms: Fifteen months ago pains in lower extremities and ataxic gait; about a year ago partial paralysis of the left arm and leg and left side of face. This was followed two months later by a second hemiplegic attack with an epileptiform convulsion; patient unconscious for two hours. Pupils irregular and sluggish, knee-jerks absent, marked Romberg, pains and bladder weakness.

Treatment: Oct. 11, 1911, 0.2 gm. salvarsan and Nov. 3, 1911, 0.35 gm. salvarsan. These were both followed by an aggravation of symptoms, namely, the pains and twitching in the legs and vesical insufficiency. Two weeks later there was a remission in these symptoms and gradual improvement. Jan. 1, 1912, 0.3 gm. salvarsan, which was not followed by any reaction except loss of control of bladder during the night following the injection. During the next few months there was a gradual improvement in every way.

Cerebrospinal Fluid; Oct. 6, 1912: Cells 18, globulin ++, Wassermann ++ to 0.8 c.c.; blood-serum —.

Treatment: Six injections of neosalvarsan, 2.5 gm., were given. When seen in January, 1914, the patient had had no treatment for a year, the pupillary reflexes had become more active and the bladder function normal. His gait improved as well as his coordination. He is able to ride horseback and walk miles without fatigue. His blood-serum was —. It was not possible to do another puncture at this time.

Case 23.—Endarteritis. Man, aged 49, married, manufacturer. Syphilis twenty-two years ago.

Symptoms: A year and a half ago the patient developed an attack of "pounding" in the ears followed instantly by sharp, severe pains in the head and unconsciousness for twenty-four hours. His vision remained blurred for many weeks and he had difficulty in articulating. He was very weak but had no definite palsies.

Treatment: Seven injections of neosalvarsan and mercury. Steady improvement took place.

Cerebrospinal Fluid; Feb. 20, 1913: Cells 6, globulin —, Wassermann ++ to 0.6 c.c., blood-serum ++.

Treatment: From Feb. 24 to March 22, 1913, he had five more injections of neosalvarsan, totaling 3.6 gm.

Clinically, no headache, no dizziness and patient feels normal.

In estimating the results obtained by the intensive treatment of syphilis of the nervous system one must not forget the influence of the psychologic effect of a new method of treatment and the fact that in many cases of tabes and paresis there are periods of remission covering months or years. Observations of this kind, however, were made before we employed the more precise methods of diagnosis and controlled our treatment by means of the examination of the spinal fluid. Furthermore, many of our most striking results have been obtained in patients who had long-continued and marked symptoms such as girdle sensation, pains and impairment of locomotion. The change in the clinical symptoms as well as the serologic findings would certainly give us strong presumptive evidence that the results were due to an actual improvement in the condition and not a normal remission.

Each case is a problem in itself and must be approached in an individual manner. Different pathologic conditions are present, so that while on the one hand we have an active process, on the other there is a degenerative one, complicated perhaps with an endarteritis, softening or scar formation. Symptoms which are due to interference with nutrition or pressure we cannot expect to influence.

When salvarsan is employed it should be done so intensively and combined with mercury. The criticism of certain writers against the employment of salvarsan in the secondary stage of syphilis is entirely fallacious, for we know that when it is given in the proper manner combined with mercury, the so-called neurorecidives do not occur. In an experience of over two years, during which this method of treatment has been followed, not a single case of nerve recurrence has been observed.

The cases submitted show that it is possible in some instances by intravenous medication alone to influence the clinical and serologic findings, and when this does not take place the only alternative may be intraspinal medication. Until we are more familiar with the effects of serum fortified *in vitro*, the Swift and Ellis method of salvarsanizing serum *in vivo* should be the one of choice. In certain cases the serum from a patient so treated may be reinforced with from 0.25 to 0.5 mg. of salvarsan. It must always be borne in mind that the spinal cord reacts intensively to irritants even of a mild grade. When a degenerative process is present the resistance of the cord is much below that of a normal one and the brunt of the irritation falls on the degenerated areas.

I am convinced that the intelligent and energetic treatment of the infection in the early stages properly controlled by the serum reaction would do much to prevent the subsequent development of nerve syphilis. It must, however, be thorough to eliminate the possibility of residual foci, which experience has taught have a predilection for the meninges. The early history of salvarsan shows that these accidents occur more precipitately after its use than under the older and milder methods of treatment.

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THE SERO-ENZYME TEST FOR SYPHILIS *

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Through the parenteral incorporation of foreign or changed protein into the organism we may observe the formation of enzymes in the blood of the body. These enzymes do not occur in the blood normally, but their presence is contingent on the entrance of blood-foreign substances. Conversely we are able to prove the occurrence of these enzymes in the blood by dialyzing such serum against the protein which gave rise to the enzymes.

The formation of these enzymes may be stimulated in the experiment at the will of the investigator, or it may take place in diseases of infectious origin, when the organisms themselves or the products of their action on the cells of the body, or both, are swept into the blood-stream and there cause the development of ferments which are capable of breaking up the complex foreign substances into their simpler non-specific component parts, which are either assimilated or thrown off. In this respect the normal and abnormal functions of the body differ quantitatively—for while, under normal conditions, the cells of the body split the complex specific molecules into simpler non-specific parts, there is added, under certain conditions, either physiologic or pathologic, the action of the ferments present or increased in the blood-serum which have the same function, namely, to split specific bodies into their non-specific components.

The work of Abderhalden has called attention to the formation and action of these ferments in pregnancy, in the course of which either chorionic epithelium or the products of the active metabolism as occurring in the syncytium may find their way into the blood-stream. Later Abderhalden extended his investigations to the diagnosis of neoplasms.

The controversy concerning the applicability of the dialyzing method for diagnostic purposes has found a fertile field in the sero-enzyme reaction for cancer, and a large number of observations have been made, which speak against the reliability of this method of diagnosis in this disease as far as it has been possible to determine, the failures may be due to a variety of causes, aside from possible errors in technic.

It is practically impossible to obtain cancer-tissue free from the connective-tissue stroma. The reaction for connective tissue is the same. This may be the reason why certain serums give positive reactions in other conditions than those clinically apparent. As the cancer invades an organ, there is usually degeneration of the neighboring tissue-cells and a consequent occurrence of protective enzymes in the serum of the patient against this cell protein. In addition, the cancer-cell may retain traces of the functional activity of the tissue from which it originated. Finally, the occurrence of protective enzymes in the serum is dependent on the breaking up of tissue in the blood and on the resorption of such broken-down tissue. Thus, an actively growing neoplasm may not give off cancer protein at all or may give it in such small quantities that the enzymes directed against it are not demonstrable. For these reasons the choice of the sero-enzyme diagnosis for neoplasms may not have been a happy one to bring the conflicting conclusions into any relation. The use of homologous cancer-tissue, that is, tissue from patients who had the new growth in the same relation as that of the suspected patient, may possibly shed some light on this line of work. At least these contradictory results are no reason for excluding this method of diagnosis from all clinical application.

The extraordinary significance of the work of Abderhalden from a clinical and purely scientific point of view should be a stimulus to further research to determine the factors which have given rise to these divergent results.

The infectious diseases offer a more promising field for this line of investigation, since, in the course of such diseases, the causative organisms find their way into the circulation and there give rise to the protective enzymes capable of digesting them. Aside from this, we have in syphilis a disease simulating many other conditions in which cell proliferation and destruction occur, so that the resorption of these broken-down foci by the blood will further stimulate the formation of enzymes against the protoplasm of the cells undergoing degeneration as the result of the presence of the *Spirochaeta pallida* in the body.

Two hundred serums, obtained mostly from patients of the outdoor clinics of St. Mary's Hospital, form the basis for this investigation. While work reported in a previous paper,[1] the majority of serums tested were obtained from known syphilitics, it has been my aim in this work to test serums of patients suffering from various complaints to determine the extent to which this reaction could be relied on as a diagnostic means.

The technic followed in the course of this work has been the same as was employed for the fifty-five cases already reported. The tissue employed was the same, namely, the "gummas" resulting from the inoculations of syphilitic tissue or blood into the testes of rabbits. These lesions become, in the course of a few transplantations from rabbit to rabbit, free from secondary infection. They are practically non-vascular and contain the *Spirochacta pallida* in large numbers.

Tissues from syphilitic patients, such as condylomas, gummas, etc., are usually secondarily infected and very vascular, for which reasons they are not suitable as tissues for the sero-enzyme reaction. The testicular tissue which has undergone mucoid degeneration due to the presence of the *Spirochaeta pallida* is of special advantage in the sero-enzyme test in that we are making use of a highly specialized tissue, against which protective enzymes are not likely to be found in the serum of patients. Thus the sero-enzyme test becomes a specific biologic test for the diagnosis of this disease. While the Wassermann reaction is a valuable aid in the diagnosis of syphilis, the principles underlying this reaction are not yet understood after years of investigation and general use.

Table 1 gives the clinical diagnosis as well as the serologic findings of the two hundred cases.

Eighty-five, or 42.5 per cent. of the entire number of cases gave a history of specific infection. Table 2 gives the number of each case as well as the serologic findings.

* Read before the Section on Dermatology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

1. Baeslack, F. W.: A Sero-Enzyme Diagnosis of Syphilis, THE JOURNAL A. M. A., March 28, 1914, p. 1002; Urol. and Cutan. Rev., May, 1914, p. 234.

TABLE 1.—DIAGNOSIS AND SEROLOGIC FINDINGS IN 200 CASES

Name	Case	Date	Age	Sex	Stage of Syphilis	History	Treatment	Wassermann Reaction	Sero-enzyme Test: Syph.	Sero-enzyme Test: Tubercl.	Sero-enzyme Test: Goiter	Other Diseases and Complaints
A. K.	1	2/ 4/14	25	♂	Primary, 5 weeks	+	—	+++	+	..	..	.....
M. D.	2	2/ 4/14	38	♂	Latent	+	+	+++	+	..	..	.....
L. S.	3	2/ 5/14	22	♀	Primary, 4 weeks	+	—	—	+	..	..	.....
C. S.	4	2/ 5/14	37	♂	Cerebral lues	+	+	+++	+	..	..	.....
Th. R.	5	2/ 6/14	76	♂	Gumma of testis	—	?	+++	+	..	..	.....
A. Y.	6	2/ 9/14	50	♀	.....	—	—	+++	+	..	..	Headache
A. C.	7	2/ 9/14	26	♂	Secondary	+	+	++	+	..	..	.....
Th. M.	8	2/16/14	35	♂	Latent	+	+	+++	+	..	..	.....
M. M.	9	2/16/14	43	♀	.....	—	—	+++	+	..	..	Uncontrolled shaking of hands
J. M.	10	2/17/14	33	♂	Primary, 5 weeks	+	—	—	+	..	..	.....
G. C.	11	2/17/14	38	♂	Primary, 6 weeks	+	—	++	+	..	..	.....
F. W.	12	2/20/14	34	♂	Gumma on arms	+	+	++	+	..	..	.....
M. D.	13	2/20/14	40	♂	Latent	+	+	++	+	..	..	.....
M. T.	14	2/23/14	36	♂	Latent	+	+	++	+	..	..	.....
B.	15	2/23/14	27	♀	Ulcers in mouth	+	—	++	+	..	..	.....
A. H.	16	2/24/14	23	♂	Primary, 5 weeks	+	—	+++	+	..	..	.....
S.	17	2/24/14	25	♂	Primary, 5 weeks	+	—	+++	+	..	..	.....
N. H.	18	2/25/14	23	♀	Primary, 4 weeks	+	—	++	+	..	..	.....
L. B.	19	2/27/14	31	♀	Latent	†	—	—	+	..	..	.....
B. S.	20	2/27/14	40	♀	Cerebral lues	—	—	++	+	..	..	.....
A. R.	21	2/27/14	25	♂	Prim-second	+	—	++	+	..	..	.....
J. E. J.	22	2/27/14	40	♂	.....	—	—	++	—	..	..	Lupus vulgaris?
H. D.	23	2/27/14	..	♂	Latent	+	+	+++	+	..	..	.....
E. J.	24	3/ 2/14	21	♂	Primary, 2 weeks	+	—	—	—	..	..	.....
B.	25	3/ 2/14	33	♀	Has child syphilitic	—	—	—	+	..	..	Sore throat
E. G.	26	3/ 4/14	33	♂	Latent	+	+	++	+	..	..	.....
L. Th.	27	3/ 4/14	53	♀	.....	—	—	++	+	..	..	Pleurisy l. side
A. S.	28	3/ 4/14	39	♂	Luetic neuroretinitis	+	+	+	+	..	..	.....
J. R.	29	3/ 6/14	21	♂	.....	—	—	—	—	..	..	Headache
H. T.	30	3/ 6/14	38	♂	Latent	+	+	++	+	..	..	.....
K.	31	3/ 6/14	29	♂	.....	—	..	—	—	..	..	Chancroid?
D.	32	3/ 9/14	45	♂	Primary	+	—	++	+	..	..	.....
Th. M.	33	3/ 9/14	60	♂	Cerebral lues	+	+	++	+	..	..	.....
P. L.	34	3/ 9/14	19	♀	.....	—	—	—	—	..	..	Epileptic attacks
S.	35	3/10/14	..	♂	Latent	+	+	+	+	..	..	.....
M.	36	3/10/14	..	♂	.....	..	—	—	—	..	..	Diabetes
D.	37	3/10/14	..	♂	Latent	+	+	++	+	..	..	.....
N.	38	3/10/14	40	♂	Ulcers on legs	+	—	—	+	..	..	.....
M. R.	39	3/ 2/14	42	♂	.....	—	—	+++	—	..	..	Retinitis
B.	40	3/ 2/14	36	♂	Tertiary	+	+	++	+	..	..	.....
F.	41	3/ 2/14	..	♀	Latent	+	+	++	+	..	..	.....
C.	42	3/ 2/14	32	♀	.....	—	—	—	—	..	..	Infiltration of skin about the nose
Ch. H.	43	3/12/14	50	♂	Cerebral syphilis	+	+	++	+	..	..	.....
A. N.	44	3/16/14	32	♂	.....	—	+	++	+	..	..	Epithelioma of tongue
E. J.	45	3/16/14	21	♂	Secondary	+	..	—	—	..	..	.....
A. H.	46	3/16/14	48	♀	Tabes	+	+	+++	+	..	..	.....
A. J.	47	3/18/14	29	♀	.....	—	—	—	—	..	..	Pain in arms and legs
M. G.	48	3/18/14	56	♀	.....	—	?	++	—	..	..	Senile dementia
D.	49	3/19/14	28	♂	Tabes	+	+	++	+	..	..	.....
S.	50	3/19/14	55	♀	Syph. neuritis	+	+	+++	+	..	..	.....
C. M.	51	3/20/14	19	♂	.....	—	—	—	+	..	..	Mixed infection
D.	52	3/21/14	43	♂	.....	—	—	+++	+	..	..	Tuberculosis
S. L.	53	3/21/14	29	♀	.....	—	—	++	+	..	..	Visceral ptosis
S. M.	54	3/23/14	32	♂	Primary	+	—	±	+	..	..	.....
F. O.	55	3/23/14	23	♂	.....	—	—	—	—	..	..	Sore throat
Ch. B.	56	3/23/14	26	♂	Primary and second	+	—	++	+	..	..	.....
A. H.	57	3/23/14	29	♂	Latent	+	+	++	+	..	..	.....
R.	58	3/24/14	..	♂	.....	—	?	+++	+	..	..	Stomach disturbances and falling of hair
H. W.	59	3/25/14	27	♂	Secondary	+	+	+++	+	..	..	.....
S. F.	60	3/25/14	19	♂	.....	—	—	+++	+	..	..	Ulcers of legs
S. C.	61	3/25/14	29	♂	Cerebral lues	+	+	+	+	..	..	.....
J. C.	62	3/25/14	31	♂	Primary and secondary	+	—	+	+	..	..	.....
G. F.	63	3/25/14	25	♂	Secondary	+	+	++	+	..	..	.....
J. H.	64	3/25/14	43	♂	.....	+	?	—	+	..	..	Periostitis on r. olecranon
A.	65	3/25/14	38	♀	Tertiary	+	+	++	+	..	..	.....
K.	66	3/25/14	29	♂	Primary	—	—	—	+	..	..	.....
H. P.	67	3/25/14	..	♂	.....	—	—	—	+	..	..	Arthritis
W. K.	68	3/25/14	19	♂	Secondary	+	—	++	+	..	..	.....
G. G.	69	3/27/14	52	♂	.....	+	?	—	—	..	..	Exostosis on r. tibia. Headaches
S. Ch.	70	3/27/14	29	♂	Cerebral lues	+	+	+++	—	..	..	.....
N. A.	71	3/30/14	26	♂	Syph. anemia	—	—	++	+	..	..	.....
P. OC.	72	3/30/14	42	♂	.....	—	—	—	—	..	..	Black-water fever
N.	73	3/30/14	28	♂	Secondary	—	—	++	+	..	..	.....
R.	74	3/31/14	35	♀	.....	—	—	++	—	..	..	Pain in r. arm and leg
J. K.	75	4/ 1/14	33	♂	.....	—	—	—	+	..	..	Frozen foot, refused to heal
A. B.	76	4/ 1/14	32	♀	.....	—	—	++	±	..	..	Coryza
S. C.	77	4/ 1/14	38	♂	.....	—	—	+	+	..	..	Pain in left shoulder
J. C.	78	4/ 3/14	36	♂	.....	—	—	+++	+	..	..	Epileptic
I. McG.	79	4/ 3/14	50	♂	Tertiary	+	+	+++	+	..	..	.....
N. C.	80	4/ 3/14	50	♂	Secondary	+	+	++	+	..	..	.....
181	81	4/ 6/14	..	♂	.....	—	—	—	—	..	..	Gonorrhea
J. L.	82	4/ 6/14	32	♂	.....	—	—	—	—	..	..	Ulcerations on l. arm and fingers
J. M. C.	83	4/ 7/14	24	♂	.....	—	—	—	—	..	..	Erosion of post-nasal bones Ozena
C. R.	84	4/ 7/14	28	♀	.....	—	—	—	—	..	..	Extoses of head
Sch.	85	4/ 8/14	32	♂	.....	—	—	—	—	..	..	Tuberculosis
Ch. L.	86	4/ 8/14	53	♂	.....	—	—	+	+	..	..	Creton Alopedia
W. O.	87	4/ 8/14	21	♂	.....	—	—	++	+	..	..	Gonorrhea
I. F.	88	4/ 8/14	35	♂	.....	—	—	—	+	..	..	Pulm. H. advanced
G. Cl.	89	4/ 9/14	25	♂	Secondary	+	—	++	—	..	..	.....
493	90	4/10/14	..	♂	.....	+	+	—	+	..	..	.....
W. N.	91	4/13/14	23	♂	Secondary	+	+	++	+	..	..	.....
W. Sch.	92	4/13/14	24	♂	Latent	+	+	++	+	..	..	.....
C. P.	93	4/14/14	36	♂	Cerebral lues	+	+	++	+	..	..	.....
H. T.	94	4/14/14	42	♂	Tabes	+	+	+	+	..	..	.....
S. F.	95	4/15/14	19	♀	Cong. syph.	+	?	++	+	..	..	.....
H.	96	4/16/14	48	♀	.....	—	—	++	+	..	..	Pain in pelvis
S. J.	97	4/16/14	24	♂	Secondary	+	+	—	—	..	..	.....
S.	98	4/17/14	..	♂	Latent	+	+	+++	+	..	..	.....
M. R.	99	4/17/14	52	♀	Secondary	+	—	+++	+	..	..	.....
A.	100	4/17/14	22	♂	Secondary	+	±	++	+	..	..	.....

TABLE 1.—DIAGNOSIS AND SEROLOGIC FINDINGS IN 200 CASES—(*Continued*)

Name	Case	Date	Age	Sex	Stage of Syphilis	History	Treatment	Wassermann Reaction	Sero-enzyme Test			Other Diseases and Complaints
									Syph.	Tuberc.	Goiter	
M. M.	101	4/20/14	24	♀	.....	—	—	++	+	..	..	Lupus vulgaris?
F. K.	102	4/20/14	48	♂	.....	—	—	++	+	..	..	Frontal and parietal headaches
J. H.	103	4/21/14	46	♂	.....	—	?	++	±	..	..	Total blindness
Sch.	104	4/21/14	..	♂	.....	—	?	++	+	..	..	Necrosis of toes
O. P.	105	4/21/14	62	♂	Tabes	+	+	++	+	..	..	.....
D.	106	4/21/14	46	♀	.....	—	—	++	+	..	..	Aphasia on left side of face, occ. pain
A. C.	107	4/21/14	16	♀	Tabes	..	—	+++	+	..	..	.....
F. G.	108	4/21/14	?	♀	.....	—	—	—	—	..	..	Pulm. tuberculosis
M. F.	109	4/21/14	..	♀	.....	+	+	+++	+	..	..	Pain in back
M. L.	110	4/22/14	38	♀	.....	—	—	—	—	..	..	Epileptic
McP.	111	4/22/14	29	♂	.....	—	—	+++	±	..	..	Dizziness
W. M.	112	4/22/14	53	♂	Tertiary	+	+	+++	+	..	..	.....
P. C.	113	4/22/14	36	♂	.....	—	—*	+++	—*	..	..	Blindness in rt. eye
P.	114	4/22/14	62	♂	Tabes	+	+*	+++	—*	..	..	.....
Sch.	115	4/23/14	40	♂	.....	—	—	++	+	..	..	Mitral and aortic regurgitation
C. B.	116	4/24/14	22	♀	.....	—	—	—	—	—	+§	Goiter
H.	117	4/24/14	24	♀	.....	—	—	++	—	..	..	Wart-like growth under right thumb, 7 years
J. J.	118	4/29/14	34	♂	.....	—	—	—	—	+	..	Tuberculosis pulm.
S. J.	119	4/29/14	24	♂	Secondary	+	+	—	+	+	..	.....
H. V.	120	4/29/14	27	♂	Rec. primary?	+	+	—	—	+	..	.....
D. J.	121	4/29/14	35	♂	.....	—	—	—	—	—	..	Saddle nose
G. L.	122	4/29/14	40	♀	Tabes	—	?	—	+	+	..	.....
H. T.	123	4/30/14	47	♂	Tabes	+	+*	+++	—*	—	..	.....
J. M.	124	4/30/14	..	♂	.....	—	—	—	—	—	..	Burn sec. degree
A. G.	125	4/30/14	18	♂	.....	—	—	+	—	+	..	Acne, Tuberc. pulm.
C.	126	4/30/14	3	♂	Congenital?	—	—	—	—	..	..	.....
W. L.	127	5/ 1/14	35	♂	Latent	+	+	—	+	..	..	.....
Ch.	128	5/ 1/14	57	♂	.....	—	—	+	—	+	..	Tuberc. pulm.
L. B.	129	5/ 1/14	25	♀	.....	—	—	—	—	—	+	Goiter
G. M.	130	5/ 1/14	30	♂	Malignant secondary	+	—	+++	—	+	..	.....
A. J.	131	5/ 1/14	19	♂	Latent	+	+	—	—	±	..	.....
G. S.	132	5/ 2/14	25	♂	Primary 5 weeks	+	—	+	+	±	..	.....
J. B.	133	5/ 2/14	8	♂	.....	—	—	—	—	+	..	Tuberc. periost. tibia, dextra
O.	134	5/ 2/14	28	♀	.....	—	—	+	—	+	..	Tuberc. right knee
S.	135	5/ 2/14	25	♂	.....	—	—	—	—	±	..	Tuberc. pulm.
G.	136	5/ 2/14	35	♀	.....	—	—	++	+	±	..	Tuberc. pulm.
L.	137	5/ 2/14	21	♀	.....	—	—	—	—	+	..	Tuberc. pulm.
L. B.	138	5/ 2/14	..	♀	.....	—	—	+	—	+	..	Tuberc. pulm.
A. W.	139	5/ 2/14	..	♂	.....	—	—	+	—	+	..	Tuberc. pulm.
J. H.	140	5/ 2/14	..	♂	.....	—	—	+	—	+	..	Tuberc. pulm.
M. L.	141	5/ 4/14	30	♂	.....	—	—	+++	+	+	..	Gonorrheal arthritis
W. W.	142	5/ 4/14	21	♀	.....	—	?	+	±	+	..	Ulcerative cond. of toes.
D. J.	143	5/ 4/14	20	♂	.....	—	?	+++	+	+	..	Gonorrhea
A. B.	144	5/ 4/14	31	♂	.....	+	?	+++	+	—	..	.....
J. F.	145	5/ 4/14	20	♀	Latent	—	—	—	—	+	+¶	Headache
M.	146	5/ 5/14	25	♀	.....	—	—	—	—	—	+‡	Pregnant
L.	147	5/ 5/14	35	♂	.....	+	+	++	+	±	..	.....
H. S.	148	5/ 5/14	56	♀	Latent	—	—	+	—	..	..	Pain in right shoulder
G.	149	5/ 5/14	..	♀	.....	—	—	—	—	+	..	Tuberc. pulm.
A. S.	150	5/ 5/14	..	♂	.....	—	—	—	—	+	..	Tuberc. pulm.
—	151	5/ 5/14	..	..	.....	—	—	+	—	+	..	Tuberc. pulm.
L. P.	152	5/ 6/14	27	♂	.....	—	—	++	+	..	..	Macroglossia
G.	153	5/ 6/14	22	♂	.....	+	+	+++	+	..	..	.....
McG.	154	5/ 8/14	28	♂	Secondary	—	—	—	—	+	..	Run down
F. M.	155	5/ 8/14	22	♂	Primary	+	—	—	—	+	..	.....
L. D.	156	5/ 8/14	42	♂	Sec. palmar syph.	—	—	++	+	+	..	.....
G. L.	157	5/ 9/14	29	♂	.....	—	—	—	—	..	..	Ulcer on forehead
M.	158	5/11/14	21	♂	.....	—	—	—	—	..	..	Normal
W. H.	159	5/11/14	..	♂	.....	+	+	+++	+	..	..	Ulcer Toe
A. A.	160	5/13/14	50	♂	.....	—	—	++	—	..	..	Asthma
A. M.	161	5/14/14	43	♂	.....	—	—	++	—	—	..	Cancer of throat
A. S.	162	5/15/14	30	♂	Secondary	+	+	+++	+	—	..	.....
A. T.	163	5/15/14	35	♂	Latent	+	+	+	+	—	..	.....
30	164	5/17/14	35	♀	.....	—	—	++	—	±	..	Pain in r. elbow and wrist
32	165	5/17/14	38	♂	.....	..	—	+++	+	±	..	Ulceration of nose and throat
L. C.	166	5/17/14	20	♀	.....	—	—	—	—	—	..	Cold
33	167	5/17/14	..	♀	.....	—	—	—	—	—	..	Warts on wrist and arms
34	168	5/17/14	..	♂	.....	—	—	—	—	—	..	Normal
R. R.	169	5/19/14	40	♀	.....	—	—	—	+	+	..	Run down
H.	170	5/19/14	..	♀	.....	—	—	—	—	—	..	Stomatitis
W.	171	5/19/14	..	♀	Latent	+	?	+++	+	+	..	.....
H. M.	172	5/19/14	21	♂	Primary	+	—	—	±	±	..	.....
F. D.	173	5/20/14	24	♂	Latent	+	+	—	±	±	..	.....
H.	174	5/21/14	34	♂	Latent	+	+	++	+	..	..	.....
P.	175	5/21/14	..	♀	.....	—	—	—	+	..	..	Facial paralysis
McG.	176	5/21/14	37	♂	.....	—	—	+	—	+	..	Tuberc. of Kidney?
K.	177	5/22/14	27	♀	.....	—	—	—	—	..	+§	Goiter
E.	178	5/22/14	25	♂	.....	—	—	++	+	..	..	Gonorrhea
L. S.	179	5/22/14	25	♂	Primary	+	—	—	+	—	..	.....
M.	180	5/22/14	58	♂	.....	—	+	++	—	+	..	Rheumatism
P. W.	181	5/22/14	18	♀	.....	—	—	—	—	+	..	Pleurisy
W.	182	5/22/14	43	♀	.....	—	—	—	—	—	..	Stomach trouble
McG.	183	5/25/14	37	♂	.....	—	—	+	—	+	..	176
H. B.	184	5/21/14	..	♀	Primary	..	—	—	—	+	..	.....
G.	185	5/25/14	43	♀	.....	—	—	—	—	+	..	Injury to head by blow
E. M.	186	5/25/14	25	♂	Secondary	+	+	++	+	..	..	.....
P. I.	187	5/25/14	56	♂	.....	—	—	—	—	+	..	Hemoptysis
G. McD.	188	5/25/14	30	♂	.....	—	—	—	—	+	..	Tuberc. pulm.
R.	189	5/25/14	55	♀	.....	—	?	++	—	+	..	Pain in legs and arms
D.	190	5/26/14	27	♂	.....	—	—	+	—	+	..	Gonorrhea
J. M.	191	5/26/14	29	♂	.....	—	—	—	+	+	..	Gonorrhea
B. U.	192	5/26/14	34	♂	Latent	+	+	+++	+	..	..	.....
J. H.	193	5/26/14	30	♂	Secondary	+	+	+	—	..	..	.....
J. W.	194	5/26/14	26	♂	.....	—	—	—	+	..	..	Ulcer on r. tonsil
Z.	195	5/26/14	..	♂	Primary	—	—	—	+	..	..	.....
P. L.	196	5/27/14	29	♀	.....	—	—	++	+	..	..	Epileptic
McD.	197	5/27/14	34	♂	Secondary	—	+	—	+	..	..	.....
B. C.	198	5/27/14	29	♂	Paresis	—	+*	+++	—	..	..	.....
I. A.	199	5/27/14	33	♂	Secondary	+	+	+	+	..	..	.....
Ch.	200	6/ 1/14	54	♀	.....	—	..	..	+	..	..	Multiple sclerosis epileptic

* Spinal fluid. † The husband of this patient was syphilitic. ‡ Placenta. § Thyroid.

TABLE 2.—SEROLOGIC FINDINGS IN 85 CASES WITH HISTORY OF SPECIFIC INFECTION*

Primary:							
1	3	10	11	16	17	18	24
++	0+	0+	++	++	++	++	00
32	54	120	132	155	172	179	
++	±+	00	++	00	0+	0+	
Secondary:							
7	15	21	45	56	59	62	63
++	++	++	++	++	++	++	++
68	80	89	90	91	97	99	100
++	++	++	00	++	00	++	++
119	130	153	162	186	193	199	
0+	+0	++	++	++	+0	++	
Tertiary:							
12	28	40	50	64	65	69	75
++	++	++	++	0+	++	00	++
112	159						
++	++						
Latent:							
2	8	13	14	23	26	30	35
++	++	+±	++	++	++	++	++
37	41	57	92	98	127	131	144
++	++	++	++	++	0+	00	++
147	163	171	173	174	192		
++	++	++	0+	++	++		
Cerebral Lues:							
4	33	43	61	70	93		
++	++	++	++	+0 Sp. f.	++		
Tabes:							
46	49	94	105	107	109	114	123
++	++	++	++	++	++	++ Sp. f.	++ Sp. f.
Congenital syphilis:							
++							
95							

* The designation to the left indicates the findings with the Wassermann reaction; to the right the result of the sero-enzyme test.

Table 3 gives the arrangement of these eighty-five cases according to the serologic findings.

TABLE 3.—ARRANGEMENT OF 85 CASES WITH HISTORY OF SPECIFIC INFECTION ACCORDING TO THE SEROLOGIC FINDINGS*

No. of Cases	Percentage	Wassermann Reaction	Sero-Enzyme Test
62	72.94	+	+
5	5.88	+	—
7	8.23	—	+
8	9.41	—	—
1	1.16	±	+
2	2.32	—	±

* In this table + = positive; — negative; ± doubtful.

Out of the 5 cases which gave a positive Wassermann reaction and a negative sero-enzyme for syphilis, 3 were cerebrospinal fluid which does not contain enzymes—Cases 70, 114, 123. The 7 cases giving a negative Wassermann reaction and a positive sero-enzyme syphilis reaction were, 3 in the primary, 1 in the secondary, 1 in the tertiary and 2 in the latent stages of syphilis. Case 54, primary chancre, gave a doubtful Wassermann reaction and a positive sero-enzyme. Cases 13 and 172, also primary chancre, gave a negative Wassermann reaction and a doubtful sero-enzyme reaction for syphilis.

TABLE 4.—ARRANGEMENT ACCORDING TO SEROLOGIC FINDINGS OF 115 CASES IN WHICH THE SPECIFIC HISTORY WAS NEGATIVE

Number	Percentage	Wassermann Reaction	Sero-Enzyme for Syphilis
31	26.95	+	+
23	20.00	+	—
13	11.3	—	+
44	38.26	—	—
4	3.47	+	±

Out of the 115 cases giving no history of specific infection 24 presented clinical symptoms of the disease.

In summarizing the findings of Table 5 we find the Wassermann reaction positive and sero-enzyme reaction positive in 12 cases or 50 per cent.; Wassermann reaction positive and sero-enzyme reaction negative in 3 cases or 12.5 per cent.; Wassermann reaction negative and sero-enzyme reaction positive in 8 cases or 33.33 per cent.; Wassermann reaction negative and sero-enzyme reaction negative in 1 case or 4.16 per cent.

TABLE 5.—CASES IN WHICH SPECIFIC INFECTION WAS DENIED, DIAGNOSED CLINICALLY AS SYPHILIS

1	Alopecia areata, gastric disturb.	58	+++	+
2	Alopecia areata	86	+	+
3	Aphasia, l, side of face	106	++	+
4	Blindness in right eye, Sp. fluid	113	+++	—
5	Cerebral lues	20	++	+
6	Gumma of testes	5	+++	+
7	Latent, husband known to be syph.	19	—	+
8	Latent, child syphilitic	25	—	+
9	Macroglossia	152	++	+
10	Necrosis of toes	104	++	+
11	Palmar syphilide	156	++	+
12	Páresis Sp. fluid	198	+++	—
13	Primary lesion	66	—	+
14	Primary lesion	184	—	—
15	Primary lesion	195	—	+
16	Retinitis	39	+++	—
17	Secondary syphilis	73	++	+
18	Secondary syphilis	101	++	+
19	Secondary syphilis	197	—	+
20	Syphilitic ulcers on legs	38	—	+
21	Syphilitic ulcers on legs	60	+++	+
22	Syphilitic ulcers in nose and throat	165	+++	+
23	Syphilitic ulcers on right tonsil	194	—	+
24	Tabes	122	—	+

The 3 cases giving a positive Wassermann reaction and a negative sero-enzyme syphilis reaction include 2 cases, that is, Cases 4 and 12, in which spinal fluid was tested. The cerebrospinal fluid does not contain the protective enzymes. The 8 cases giving a negative Wassermann reaction and a positive sero-enzyme syphilis reaction were: 2 cases of primary syphilis (Cases 66 and 195), 1 secondary (Case 197), 2 latent (Cases 19 and 25), 2 had syphilitic ulcers (Cases 38 and 194), and 1 case of tabes (Case 122). Aside from the 12 cases found to be positive to the Wassermann reaction and sero-enzyme test for syphilis in the series clinically syphilitic, 19 others were found among the remaining 91 whose serums reacted positive in both tests, or 16.52 per cent.

TABLE 6.—WASSERMANN REACTION AND SERO-ENZYME TEST POSITIVE IN CASES IN WHICH SPECIFIC INFECTION WAS DENIED

		No.	Case
1	Anemia	1	71
2	Arthritis	1	141
3	Epilepsy	3	78, 196, 200
4	Epithelioma of tongue	1	44
5	Gonorrhea	3	87, 143, 178
6	Headache	2	6, 102
7	Mitral and aortic regurgitation	1	115
8	Pain in shoulder	1	77
9	Pelvic pain	1	96
10	Pleurisy	1	27
11	Tuberculosis	2	52, 136
12	Uncontrollable shaking of hands	1	9
13	Visceral Ptosis	1	53
		19	

WASSERMANN REACTION POSITIVE, SERO-ENZYME DOUBTFUL

1	Blindness (total)	1	103
2	Coryza	1	76
3	Dizziness	1	111
4	Ulcerative condition of the toes	1	142
		4	

Of the 4 cases giving a positive Wassermann and a doubtful sero-enzyme reaction, Case 142 gave a single positive Wassermann while the remaining 3 gave double positive results. These latter 3 patients

may be suffering from specific infection although no clue to it could be elicited in their history.

The Wassermann reaction was positive and the sero-enzyme test for syphilis negative in 20 out of 115 cases, or 17.39 per cent. It is interesting to note that 9 cases of tuberculous condition, in Table 7 gave a positive Wassermann reaction which, though faint, was distinct. Tuberculosis is capable of giving a positive Wassermann reaction. If we subtract the 9 cases of tuberculosis in Table 7 and Case 161, cancer of the throat, we have left 10 cases which possibly might be syphilitic.

TABLE 7.—WASSERMANN REACTION POSITIVE, SERO-ENZYME TEST NEGATIVE

		Case	No.
1	Asthma	1	160
2	Cancer of throat	1	161
3	Gonorrhea	1	190
4	Gon. rheumatism	1	180
5	Lupus vulgaris	1	22
6	Pain in arms and legs, elbows, wrist	3	74, 164, 189
7	Pain in left shoulder	1	148
8	Senile dementia	1	48
9	Tuberculosis	9	125, 128, 134, 138, 139, 140, 151, 176, 183
10	Wart under thumb-nail	1	117
		20	

Six serums of patients suffering from the conditions indicated in Table 8 gave a negative Wassermann reaction and a positive sero-enzyme test.

TABLE 8.—WASSERMANN REACTION NEGATIVE, SERO-ENZYME TEST POSITIVE

		Case	No.
1	Facial paralysis	1	175
2	Frozen foot refusing to heal	1	75
3	Gonorrhea	1	191
4	Mixed Infection (Gon.)	1	51
5	Run-down condition	1	169
6	Arthritis	1	67

Out of the remaining 42 cases, 36, or 39 per cent., were both negative for Wassermann reaction and the sero-enzyme test for syphilis. The clinical condition of these cases is given in Table 9.

TABLE 9.—SPECIFIC INFECTION DENIED. WASSERMANN REACTION AND SERO-ENZYME TEST NEGATIVE

	Case	No.
Acne rosacea	1	42
Black-water fever	1	72
Burn Sec. Degree	1	124
Chancroid	1	31
Coryza	1	166
Diabetes	1	36
Epilepsy	2	34, 120
Exostosis on head	1	84
Gonorrhea	1	81
Goiter	3	116, 129, 177
Headache	2	29, 145
Injury to head	1	185
Normal	3	126, 158, 168
Ozena, erosion of nose	1	83
Pain in arm and legs	1	47
Pregnancy	1	146
Pleurisy	1	181
Run down condition	1	154
Saddle Nose	1	121
Sore throat	1	55
Stomatitis	1	170
Stomach trouble	1	182
Tuberculosis	11	85, 88, 108, 118, 133, 135, 137, 149, 150, 187, 188
Ulcers on L. arm and fingers	1	82
Ulcer on forehead (Epithelioma?)	1	157
Warts on arm and hands	1	167

SUMMARY

1. In conclusion I would point out that in the sero-enzyme test for syphilis, when carried out with syphilitic testicular tissue, is probably a specific reaction, since the somatic cells are highly specialized, presupposing a specific enzyme for their cleavage. Thus, in the use of the gumma produced in rabbits by inoculation, we make use of a substratum which, when free from contamination, is superior to tissue prepared from the tissue of syphilitic patients, which of necessity is contaminated and is likely to give rise to positive reaction in other conditions.

2. The reaction is not applicable in cases in which cerebrospinal fluid is to be tested.

3. The reaction is more specific than the Wassermann reaction, for it has always given a positive reaction with the serum of tabetics, while the Wassermann reaction in this condition is negative in about 40 per cent. of cases. I would also point out the nine cases of tuberculosis which gave a positive Wassermann reaction although no sign of syphilis could be found in any of these patients. The specificity of the test is further shown in the 8 cases giving a negative Wassermann reaction and a positive sero-enzyme test (Summary of Table 5).

4. The technic of the reaction demands cleanliness and careful control of shells, tissue, serum and the carrying out of the ninhydrin reaction. As one becomes acquainted with the test one's confidence in it increases.

5. The sero-enzyme test for syphilis represents, with the exceptions indicated, a true biologic test for this disease.

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THE INTRAVENOUS ADMINISTRATION OF MERCURY IN SYPHILIS*

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This method was first used by Bacelli in 1893, and subsequently by Blaschko, Lewin, Chopping, Lane, Abadie, Campana, and Stoukowwenkoff and others. The method in recent years has apparently fallen into disuse, very few articles on the subject being found in the literature. This may be due to the rather discouraging attitude of Fournier, who looked on the method with disfavor. He is under the impression that a toxic agent, such as mercury, suddenly placed in contact with the endometrium, may possibly exert a deleterious effect on it. His supposition is based on the experiments of Ullman. While Ullman has never seen an animal die after the intravenous injection of large doses of mercury, yet in a few cases in which death occurred later, there were no lesions which would account for the death of the animal, and Fournier reasons that death might have been caused by paralysis of the heart, engendered by the previous injections of mercury. Two comparatively recent articles on the intravenous injection of mercury in the treatment of syphilis are by Meyer, whose results were disappointing,

* Read before the Section on Dermatology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

and Lydston, whose results in eight cases were very gratifying. Wernigk appears enthusiastic, after twelve years of experience with the intravenous injection of mercury. Balzer, at the French Medical Congress of 1904, endorsed it for cerebral and ocular syphilis. Ravant uses the cyanid of mercury, intravenously, as a preliminary to salvarsan therapy.

Our experience with this method is derived from its use at the New York Skin and Cancer Hospital, in a large number of cases of cutaneous syphilis. We first used the bichlorid in doses of 1/6 to 1/3 grain in distilled water. On an average, six injections were given in each case. Our best results were attained with this salt. We also used the benzoate in a 1 per cent. solution in normal saline, of which the dose was from 2 to 12 c.c. While the results with this salt were good, they were inferior to those obtained with the bichlorid. Enesol[1] in our hands proved very unsatisfactory, and a proprietary preparation of mercuric oxycyanid also gave inferior results.

The technic of the injection is simple, provided that the subject has prominent veins, otherwise the percentage of failure to get the needle in the lumen of the vein is in proportion to the experience of the operator in intravenous work. The most prominent vein at the bend of the elbow of either arm is selected, the region sterilized with alcohol, and a constricting band, preferably a piece of rubber tubing, applied to the lower third of the arm. The patient closes the fist tightly so as to increase the tension in the veins. The filled glass syringe with needle attached, is inserted in a vertical direction through the skin, and then directed obliquely into the vein. The direct flow of blood into the barrel of the syringe is sufficient indication that the needle is within the lumen of the vein. The constricting band is removed, and the mercurial solution with the admixed blood is slowly injected. The amount of solution used varies of course with the particular dose which we wish to give, but it rarely exceeds 12 c.c.

The advantages of the intravenous method are: immediate introduction of the curative agent in the circulating blood, rapid therapeutic results, mathematical dosage and absence of pain. The most important disadvantage is the occasional occurrence of phlebitis, and periphlebitis, which seemed more frequent after the use of the bichlorid than of the benzoate; this complication, however, occurred only in our early cases, when the solution used was more concentrated. A small number of the patients suffered from ptyalism and a few others developed mercurial diarrhea, but, in none of the cases did these complications cause anything more than a temporary disturbance.

The results in our hands in cases where the rapid removal of lesions was desired were uniformly good. Among the cases we recall was one with an extensive palmar lesion of the right hand of ten years' duration; it entirely disappeared after two injections of 4 and 7 c.c., respectively, of a 0.5 per cent. solution of benzoate of mercury. Another case with two large serpiginous, greatly infiltrated, and crusted lesions, several inches in diameter, on the left hand and wrist, cleared up entirely after the third injection. Still another lesion, involving half the palm of the left hand, which had resisted mixed treatment for four months, cleared up entirely after the third injection. A gumma of the right thigh disappeared entirely after three injections. An extensive secondary eruption of the pustular type resolved after four injections, leaving scales of dried pus, which were easily removed, disclosing an entirely healed lesion beneath. An extensive raised, grouped, papular lesion of the left cheek was rapidly resolving, and had lost all of its infiltration; the lesions were even with the skin after three injections. An ulcerated, serpiginous lesion, 4 inches long by 1 inch broad, and greatly crusted, healed entirely after two injections.

These are a few of the many cases which impressed us with the rapid therapeutic results obtained with this method, and we are strongly convinced that despite its obvious disadvantages it is of great value in selected cases. It is not to be used indiscriminately, however, and we do not recommend it for routine administration.

1. See Enesol, an Arsenic and Mercury Preparation of Uncertain Composition, Propaganda Department, THE JOURNAL A. M. A., July 26, 1913, p. 292.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. WHITE, HAZEN, NICHOLS, BAESLACK, FORDYCE, CORBUS, AND KINGSBURY AND BECHET

DR. WILLIAM T. CORLETT, Cleveland: Dr. White emphasized the fact that patients themselves are often responsible for much of the misery and many of the late lesions that follow in the course of syphilis. His statistics show that in a large percentage of cases, patients come to the hospital for treatment for only a few days. In our experience at the Lakeside Hospital, in a large percentage of cases, patients were treated for only three days, a still larger percentage for two or three weeks, etc. This confirms the experience of Dr. White and shows that the patients themselves do not realize the importance of their disease or the value of thorough treatment from the beginning. We have endeavored to educate such patients by distributing a printed circular setting forth some of the possible dangers of the disease, if left untreated, and also emphasizing the precautions that they should take to guard against infecting others, and the probable length of time that it will be necessary to follow out a systematic course of treatment. Furthermore, even physicians are not alive to the importance of treatment during the primary stage of the infection. We have endeavored, especially, to give heroic treatment in appropriate cases at the outset of the disease, and while it is extremely difficult to speak with assurance on this point, we believe that in a few instances we were successful in curing the disease in this way, as a few patients have been kept under careful observation for at least two years without showing further manifestations of syphilis. I believe that 99 per cent. of the physicians in this country are incapable of treating the disease according to the advocated standard, and that the root of the trouble lies with the medical schools and hospitals. The haphazard way in which the delicate technic advocated by Dr. Fordyce and required in intraspinal treatment, is carried out in many hospitals where the work is often left to young inexperienced interns and without intelligent supervision, is appalling. In the light of this symposium more than ever do I believe that the hospital treatment and medical-school teaching of syphilis, in all its phases, should be under the guidance of one particular man with the cooperation of the other members of the staff.

DR. S. POLLITZER, New York: In a paper read before the New York County Medical Society in January, 1911, I developed the theory that the spirochetes soon after infection were distributed throughout the entire system, involving every organ and tissue reached by the blood-stream. There most of them were probably destroyed by the natural forces of resistance, but many doubtless passed over into a resting or spore stage in which they remained indefinitely without harm to their host till under some local stimulus, such as a trauma, they renewed their activity and produced the lesions of tertiary syphilis. This theory seems to me a necessary

conclusion from the known facts of biology and the clinical course of syphilis. To obviate the late lesions of the disease every case should be treated at its very inception by the most intense medication at our command. The question of the best method of treating tabes and paresis is by no means settled. Treatment by intraspinal methods is still in an experimental stage and the present state of our knowledge of these methods does not justify their general adoption. The working out of the details should be left to those who are qualified by their larger opportunities to carry them out. The intraspinal methods give promise of usefulness; but we must realize that no possible treatment can restore nerve fibers and cells that have been destroyed. I employ the Ravaut method, direct injection of hypertonic solutions of neosalvarsan, and while I have had some very unpleasant immediate symptoms, I have had no permanently bad results from it. Meanwhile it is well to remember that these forms of syphilis are immensely benefited by energetic treatment by other methods. For the past two years I have had a patient with paresis under observation whom I took out of the psychopathic ward at Bellevue Hospital and gave sixteen injections of salvarsan, in all 10 gm., in sixty days. That man is to-day apparently well; his blood-Wassermann is negative, his spinal fluid contains three cells to the cubic millimeter, globulin negative, Wasserman negative with all but the maximum quantity of fluid. I shall report on the final outcome of this case in ten years. It is unfortunate that the treatment of syphilis in its early stage is almost exclusively in the hands of the general practitioner, who so often contents himself with prescribing some pills and loses sight of the patient with the disappearance of the first symptoms. It is unfortunate that he does not realize his opportunity and his responsibilities. There is reason to believe that, in its earliest stage, syphilis can be cured by excision of the chancre and a single energetic course of salvarsan and mercury. It is equally true that the specialists for the eye and throat treat their cases of syphilis badly, that is, symptomatically. They also stand in need of education on this subject.

DR. C. AUGUSTUS SIMPSON, Washington, D. C.: The percentage of syphilis among the negroes of Washington is very high, as they rarely persist in the prescribed treatment. I think that the number of cases among the white population is not so great as in some other sections of the country, and that the amount of syphilis among the white patients that visit Freedmen's Hospital of our city is no indication of the number of cases there, as very few white patients can be treated in a negro hospital and the class that does apply for treatment is, as a rule, the very class in which one would expect to find a large number of syphilitics. The frequency of syphilis of the nervous system in the future will depend a good deal on the thoroughness and conscientiousness with which the medical man carries out his treatment and blood-tests. If he cannot distinguish between a negative provocative Wassermann and a negative plain Wassermann he will soon get into trouble. The latter means little or nothing so far as a cure is concerned. An effort should be made to get a negative luetin reaction, while a negative provocative test should be insisted on before the patient is allowed to stop his treatment.

DR. A. RAVOGLI, Cincinnati: The syphilitic patient usually gets what he deserves. Patients who refuse to undergo proper treatment for the prescribed length of time and who drink alcoholics and neglect themselves are very apt to suffer in the future. There is no doubt that syphilis is very common among the negroes, and in my hospital work it is exceptional to find an adult negro who is free from the disease or does not give a history of a past infection, while among the negro children, evidences of hereditary syphilis are very frequently observed. In the colored race, syphilis is probably more severe than in the white, and this I am rather inclined to attribute to the nonchalance with which the former usually regards his infection. He looks on the disease with apparent unconcern, and usually cannot be restrained in the hospital for more than a few days. There is no question that we have obtained very good results in the mercurial treatment of syphilis in the past. Some time ago I was asked by a French writer how many of my syphilitic patients had developed tabes or general paresis, and on reviewing my books, I found very few. In many of my cases, intramuscular injections of a 1 per cent. solution of mercuric chlorid, and later, gray (mercurial) oil and calomel, gave very satisfactory results, and now, of course, in salvarsan, we have another powerful weapon. The use of intravenous injections of mercuric oxycyanid, as recommended by my teacher, Professor Baccelli, and used by Ernest Lane of London, apparently gave no better results than those I have obtained by the older methods of intramuscular injections and I think the intramuscular injections are preferable to the intravenous. This does not apply, however, to salvarsan, which gives its best results when injected into the veins, and does not produce so severe pains as it does when injected into the muscular masses. I have never used the intradural injections, and I was much interested in the results obtained by this method.

DR. THOMAS W. MURRELL, Richmond, Va.: Every southern man feels a vital interest in syphilis in the negro which is more important to him than leprosy, and this condition has been practically forced on the negro by the national government. Before the Civil War, the negro was a commercial problem. His physical as well as his moral condition was well looked after, as is shown by his conduct up to that time. Then he was turned loose, his naturally strong sexual instincts were no longer held in control, he began to drink to excess, to eat poor food, to live in a hovel, to be insufficiently clothed, and gradually he went from bad to worse until now the death rate among the negro is higher than that of the white race, while the birth rate, in spite of the well known procreative power of the black race, has steadily grown smaller. Syphilis is very common among them and insanity in the State of Virginia has increased 1,000 per cent. since 1865. Its increase, in fact, is one of the problems of the state. In our dispensary work in Richmond we make the Wassermann test in negroes as a routine measure, and it is almost invariably positive. Of all the specimens of blood taken, probably 75 per cent. show a positive Wassermann. We can sometimes reason out things, even if we are not laboratory men, and I believe that some of us have a mistaken idea as to the relative value of salvarsan and mercury in syphilis. Salvarsan is a spirillicide, but I do not think the same can be said of mercury. In England, at one time, the accepted method of treatment was to give mercury to the point of salivation. We can keep a patient saturated with mercury, and yet we do not kill the spirochetes, and in any bacterial invasion of the body we have the formation of toxins which are produced either by the bacteria or by the body. In our efforts at treatment, we must destroy the organism, neutralize the toxins and strengthen the bodily resistance, and the action of mercury is to neutralize the syphilitic toxins and allow the bodily resistance to take care of the situation. One error that is too often made is to rely too much on drugs and leave the condition of the patient out of consideration.

DR. CLAUDE O. ABERNETHY, Raleigh, N. C.: I do not think that the intraspinous method of treating late syphilis should be generally adopted, at least in the present state of our knowledge, nor do I think it necessary. I have at present under my observation a case of progressive paralysis of the lower extremities in a patient with late syphilis who is rapidly improving under intravenous injections of salvarsan, combined with mercury and the iodids.

DR. H. H. HAZEN, Washington, D. C.: My paper was really intended as a provocative one, for we are not paying the proper attention to all of the aspects of syphilis. This malady is certainly not properly treated in the hospitals, the economic side of it has never been carefully studied, and the methods of prevention are very crude, to say the least. For instance, in my clinic we frequently see women with active secondary lesions, including mucous patches, attending to the babies of ignorant or foolish parents. This is not right

and we should have some authority to stop it. With regard to the relative frequency of syphilis among the whites and blacks, the statement that I made was that, in spite of the showing of certain localized statistics, general statistics showed that the negro suffered from syphilis one and one-half times as often as the white. At present we are having a good many Wassermanns made, but unfortunately have not as yet been able to adopt it as a routine measure. In the negro our statistics show about 30 per cent. positive, while at Johns Hopkins I understand nearly 50 per cent. in this race are positive. I am inclined to think that mercury is a spirillicide, because if one makes a dark-field examination of a lesion and finds a great number of organisms, then gives an intramuscular injection of gray oil, and again searches for the parasites, in twenty-four to forty-eight hours he will find a great reduction in their numbers.

Dr. Henry J. Nichols, Washington, D. C.: I see no reason why the spirochete should not remain in the body for many years as a spirochete, and the weight of evidence is rather against a spore stage. Still, there are several gaps in our knowledge of the subject and further experiments will be necessary to complete the chain of evidence.

Dr. John A. Fordyce, New York: I wish to emphasize what I said with regard to the Ravaut method of intraspinal injections as compared with the Swift-Ellis method. It seems to me that the latter method is not so apt to be followed by any of the bad consequences of the Ravaut method.

D. B. C. Corbus, Chicago: Since last fall, when I began to work along these lines, I have seen quite a number of patients with syphilis who were supposed to be cured and who gave a negative blood-Wassermann reaction, but who, on spinal puncture, showed subarachnoid involvement. I desire, therefore, again to call attention to the importance, especially in this class of cases, of an examination of the cerebrospinal fluid, the technic of which should be more generally understood and applied.

Dr. Paul E. Bechet, New York: Dr. Ravogli, in discussing the intravenous injection of mercury in syphilis, mentions pain as a prominent factor in patients treated by a confrère of his. The pain was undoubtedly caused by the invasion of the perivascular tissue, by the mercurial solution. If the needle is within the lumen of the vein, there is no leaking of the solution outside of it, and the operation is consequently absolutely painless.

THE ETIOLOGY OF PHLYCTENULAR OPHTHALMIA

IS TUBERCULOSIS REALLY AS IMPORTANT A FACTOR IN THE CAUSATION OF THIS DISEASE AS IS NOW COMMONLY TAUGHT? *

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BALTIMORE

Few questions in ophthalmology have been more discussed in recent years than the etiology of phlyctenular ophthalmia. This is accounted for by the fact that during this period the theory has been advanced, and has been supported by many eminent ophthalmologists, that phlyctenulosis is a tuberculous manifestation.

The advocates of this doctrine unceremoniously reject the older view of the etiology of this affection, which led especially German writers on diseases of the eye to designate it as ophthalmia eczematosa, and, in conformity with their convictions, urgently commend in its treatment the employment of tuberculin, as the most efficacious remedial agent at our command. This being the case, it is evident that the true nature and causation of phlyctenular ophthalmia is not merely an academic question, but is one of very practical importance; for, after all, if it is really *not* tuberculous, the use of tuberculin in its treatment is sure to do more harm than good, and is most distinctly contra-indicated.

Let us, then, consider the evidence which has been advanced in support of the new doctrine, and try, impartially if we can, to determine its import. And here it may be premised that the advocates of the tuberculous theory no longer contend that the conjunctival or corneal phlyctenules are examples of true ocular tuberculosis, since they are compelled to admit not only that they never contain tubercle bacilli, and that tuberculosis has never been produced in animals by inoculating them with the contents of the phlyctenules, but that histologically the phlyctenules bear no resemblance whatever to true tuberculous tissue. What they do maintain is that phlyctenulosis is a pseudotuberculous or paratuberculous affection, caused by the action of the toxins of tubercle bacilli present somewhere in the body.

In support of this belief they cite:

1. The frequency—from 70 to 90 per cent., according to different investigators—with which the subjects of phlyctenulosis give a positive reaction to diagnostic tests with tuberculin, the von Pirquet test being chiefly relied on.

2. The efficacy of tuberculin in the treatment of phlyctenulosis, and especially its efficacy in controlling chronic cases and those showing a tendency to recurrence.

3. The development of phlyctenular conjunctivitis and keratitis after the application of tuberculin to the eye, and after other diagnostic tuberculin tests.

4. The occasional occurrence in phlyctenular ophthalmia of focal reaction following diagnostic or therapeutic injections of tuberculin and after the von Pirquet test.

5. The chronicity and tendency to recurrence of the disease, its predilection for the poorly nourished and for those in whom the existence of the so-called strumous or scrofulous diathesis is manifest, and the glandular complications which frequently accompany it.

Before taking up this summary of the evidence advanced in support of the tuberculosis theory, let us, for a moment, consider the significance of the admitted non-existence of tubercle bacilli in the phlyctenules, and, further, the present assertion that phlyctenulosis is a pseudotuberculous affection, due to the toxins of the tubercle bacillus.

Dr. John W. H. Eyre,[1] Hunterian professor, and examiner in bacteriology, Royal College of Surgeons, in his Hunterian lecture on "Tuberculosis of the Conjunctiva," makes this very emphatic pronouncement:

> That many of those subject to phlyctenules give evidence of the existence of tuberculous infection in some portion of their tissues is no evidence that the conjunctival lesion is also tuberculous, and until some responsible observer has demonstrated the presence of the tubercle bacillus in an extended series of phlyctenules, I see no valid reason for regarding phlyctenular conjunctivitis, *per se*, as a form of tuberculosis of the conjunctiva.

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* Read before the Section on Ophthalmology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

1. Eyre, John W. H.: Lancet, London, 1912, i, 1319.

Dr. L. V. Hamman, chief of the Phipps Tuberculosis Dispensary of the Johns Hopkins Hospital, and one of the authors of Hamman and Wolman's authoritative work, "Tuberculin in Diagnosis and Treatment," in conversation with me, has expressed a similar view. The substance of his statement was that if the phlyctenules are a tuberculous manifestation they certainly *sometimes* should show the presence of the tubercle bacillus; otherwise the theory that they are of tuberculous origin is without warrant. He also drew attention to the fact, as bearing on the contention that the phlyctenules are a pseudotuberculous manifestation due to the toxins of the tubercle bacillus, that this view of the action of toxins is rapidly losing ground, and that very many pathologic lesions formerly accounted for in this way have since been proved to be due, not to the action of toxins, but to the presence in these lesions of the bacteria themselves.

Let us now take up in order the evidence on which the doctrine of the tuberculous nature of phlyctenular ophthalmia rests.

1. The frequency with which the subjects of phlyctenulosis give a positive reaction to the von Pirquet and other diagnostic tuberculin tests.

To this evidence the advocates of the doctrine can hardly attach much weight, since Hamburger of Vienna and others have shown that about the same percentage of positive reactions to the von Pirquet test is encountered in healthy persons as has been found in those with phlyctenulosis. On this point Eyre, already quoted, says:

> I have come to regard a positive reaction to these [tuberculin skin] tests when occurring in an individual more than 1 or 2 years old as quite useless for purposes of diagnosis.

And, just as emphatically, Hamman and Wolman[2] say:

> A positive reaction [to von Pirquet's test] is of considerable value in diagnosis during the first year of life, of less during the second, of little in childhood, and of none in adult life.

It is, perhaps, hardly necessary to remark that, in the absence of definite evidence of clinical tuberculosis, no competent and conscientious physician would feel himself warranted in employing tuberculin therapeutically, simply because the von Pirquet test elicited a positive reaction.

2. The efficacy of tuberculin in the treatment of phlyctenulosis, especially in chronic cases and in preventing recurrent attacks of the disease.

It has not been possible for me to make even an approximately thorough study of the extensive literature of the past few years dealing with the theory of the tuberculous nature of phlyctenular ophthalmia. Two important papers published in this country, however, which together include a summary of the results obtained in ninety cases of phlyctenulosis treated with tuberculin, seem to afford fairly conclusive evidence as to the efficacy of this treatment.

Fifty of these cases were reported by Dr. Richard J. Tivnen[3] of Chicago in a paper read before the Section on Ophthalmology of the American Medical Association in 1911. It is to be regretted that, though the author in the tabular report of these cases heads a column "Therapeutic Duration of Treatment," he gives under this heading only the date when the treatment was *begun*, and does not in a single instance mention its *duration*. Measurably to offset this omission, however, he states elsewhere that the shortest period of treatment of any case was "about three weeks," and the longest six months.

Turning to the column in which the duration of the disease before treatment was begun is given, we find that eleven of the fifty cases had existed three months or less. Of these only two had lasted this long, five were of two months' duration, one of six weeks, one of one month, one of two weeks, and one had existed only two days. None of these cases can be regarded as chronic in character, and that not one of them, not even that of two days' duration, was cured in less than "about three weeks" seems to afford but poor evidence of the value of the treatment employed. Indeed, when it is borne in mind that in addition to the administration of tuberculin the usual ocular treatment, such as yellow oxid of mercury, atropin, etc., was employed, that constitutional measures, such as regulation of the diet and hygienic conditions, were not overlooked, and further that "tonics" were administered, it is difficult to escape the conviction that the tuberculin was a definite handicap to the other very proper therapeutic measures, and that the results would almost surely have been more satisfactory had it not been employed. It may be added, as of interest, that in only six of the cases (12 per cent.) was there a history obtained of either active or latent tuberculosis.

The other paper referred to was by Davis and Vaugan,[4] published in September, 1912. Like Dr. Tivnen, they also head a column in their tabular summary of forty cases of phlyctenular ophthalmia treated with tuberculin "Therapeutic Duration of Treatment," but, under this head, mention only when the treatment was begun. For this they make partial amends by stating, in another part of their paper, that the duration of treatment varied from "a few weeks" to eight months.

It is interesting to note that of the forty cases the result of the von Pirquet test was positive in only twenty-seven (67.5 per cent.), and was negative in thirteen cases (32.5 per cent.), hardly as large a percentage of positive results as might be expected in the same number of healthy persons.

Turning to their column showing the duration of the disease before treatment, we find no less than fourteen cases (35 per cent.), in which this is given as two months or less. Of these the duration of four was two months, three "off and on" for two months, four one month, one two weeks, and two one week. The same comment applies to these cases as to the acute cases of Dr. Tivnen's table. It seems remarkable that not one of these comparatively recent cases was cured in less than "a few weeks." That their results were even less favorable than those of Dr. Tivnen is doubtless accounted for by the fact that they employed no constitutional treatment but tuberculin and "but little local treatment," atropin having been used in but two cases. It may be added, as worthy of note, that but *one* of their cases showed

2. Hamman and Wolman: Tuberculin in Diagnosis and Treatment, p. 126.

3. Tivnen, Richard J.: Tuberculin as a Diagnostic and Therapeutic Agent in the Treatment of Conjunctivitis Eczematosa (Phlyctenular Conjunctivitis and Keratitis), THE JOURNAL A. M. A., Dec. 9, 1911, p. 1886.

4. Davis, A. Edward, and Vaugan, Harry: Phlyctenular Conjunctivitis and Keratitis, with Special Reference to Etiology and the Value of Tuberculin as a Diagnostic Agent, Ophth. Rec., 1912, xxi, 476.

clinical signs of active or inactive tuberculosis—tuberculous glands of the neck being present in this case.

One of the best-equipped and most careful students of ocular tuberculosis in this country, Dr. George S. Derby of Boston, has probably had as large an experience with tuberculin in the treatment of phlyctenular ophthalmia as any one in America, and he has expressed his views very plainly as to its value in this condition. In discussing Dr. Bruns' paper on "Phlyctenular Ophthalmia and Its Etiology," in the Section on Ophthalmology of the American Medical Association, at Atlantic City, in June, 1912, he said:

> I have had considerable experience with tuberculin in the treatment of these [phlyctenulosis] cases during the past five years, and I feel doubtful whether any of the cases have been much benefited by it.

And, again, in discussing Dr. Will Walter's paper, "Phlyctenular Ophthalmia and Episcleritis," before the same Section, in 1913, he said:

> The use of tuberculin in phlyctenular disease is not often necessary. Most of these patients recover without tuberculin. Even though tuberculin is used, *it is often extremely difficult to prevent repeated attacks in obstinate cases.* . . . It is not nearly so important as general hygiene.

I have taken the liberty of italicizing this observation of Dr. Derby as to the inefficacy of tuberculin in preventing repeated attacks in obstinate cases of phlyctenulosis, for it is to be borne in mind that its efficacy in accomplishing just what Dr. Derby's experience shows that it does not accomplish has been cited as one of the proofs of the tuberculous nature of phlyctenular ophthalmia.

3. The development of phlyctenular conjunctivitis and keratitis after application of tuberculin to the eye and after other diagnostic tuberculin tests.

On this point Hamman and Wolman[5] say:

> In several thousand [ocular] instillations [of tuberculin] we have had but two untoward results, one patient developing phlyctenular conjunctivitis, which subsequently completely healed, the other, an episcleritis, which also healed, and which we are not sure was due to the test.

In my own mind there is little doubt that had the instillations in these several thousand eyes of persons whose condition seemed to demand a tuberculin test consisted of a 2 per cent. solution of silver nitrate or copper sulphate, a considerably larger number of phlyctenular cases would have developed; for every one of large experience in the management of ocular maladies has seen cases of phlyctenular keratitis or conjunctivitis which were provoked by the application of unduly severe remedies to the eye, and I can recall others in which the attack followed a slight traumatism, such as an abrasion of the cornea or bulbar conjunctiva.

Some who teach the tuberculous doctrine of phlyctenulosis hold that "some external, local stimulant is necessary to bring out the phlyctenules." If this view is correct, why, I would ask, should not the tuberculin employed in the Calmette test, acting simply as a stimulant or irritant, occasionally produce this effect?

It is, perhaps, not so easy to explain satisfactorily the development of phlyctenules after the skin or subcutaneous tuberculin tests. It is to be said, however, that this is an unusual occurrence, and it may be questioned whether it ever happens, except in persons whose systemic condition is such that an outbreak of phlyctenulosis may be regarded as imminent. Under such circumstances it is readily conceivable that any added constitutional disturbance, such as the systemic effect of tuberculin, or that which might follow the ingestion of unwholesome food, may turn the scales, and precipitate the ocular inflammation, just as, under like circumstances, the application of any irritant to the eye may do.

4. The occasional occurrence in phlyctenular ophthalmia of focal reaction following diagnostic or therapeutic injections of tuberculin or after the von Pirquet test.

Dr. Tivnen in his paper, already quoted, mentions the occurrence of focal reaction after the von Pirquet test in four of his fifty cases of phlyctenulosis, but describes the reaction in three of these as being "slight." Drs. Davis and Vaugan in their forty cases mention three instances of focal reaction, one of these being "slight." If we interpret, and this seems not unwarrantable, the three "slight" reactions of Tivnen's series and the one of Davis and Vaugan's as "doubtful," we have in the combined series of ninety cases but three definitely positive focal reactions—a percentage of only 3.33. Although I am aware that it is not in accord with the commonly accepted view, I cannot persuade myself that any constitutional disturbance comparable to that produced by the von Pirquet test would not have influenced unfavorably the ocular inflammation quite as often and quite as markedly as happened in these ninety cases after the tuberculin test.

It is worthy of remark that in neither of the papers in question is there mention of focal reaction having resulted, in a single instance, from the *therapeutic injection of tuberculin.* If such reactions had been observed, it seems most improbable that they would not have been recorded as evidence in favor of the authors' views regarding the etiology of phlyctenular ophthalmia; if no such reactions occurred, the circumstance is certainly of much significance.

5. The chronicity and tendency to recurrence of phlyctenular ophthalmia; its predilection for the poorly nourished and for those in whom the existence of the so-called strumous or scrofulous diathesis is manifest, and the glandular complications which frequently accompany it.

As is universally recognized, phlyctenular ophthalmia is essentially a disease of childhood. In the exceptional cases encountered in adults it will generally be found that the affection first manifested itself in childhood, and has recurred from time to time in after years. These, in my experience, are the cases in which the "scrofulous" diathesis, the glandular complications, and not infrequently, I am willing to admit, definite clinical signs of tuberculosis, are found. On the other hand, the much larger number of cases encountered in childhood, which commonly respond promptly to treatment, and which, if they recur at all, do so only during childhood, do not show, or, at all events, very rarely show, any signs of scrofula or tuberculosis. These are the cases, I contend, which must be regarded as typical, and it is from the study of these cases that we must draw conclusions as to the etiology of the affection, and not from the exceptional and atypical cases encountered in adult life.

5. Hamman and Wolman: Tuberculin in Diagnosis and Treatment, p. 209.

What, then, does the study of these cases of childhood show? In the first place, it may be said that the children brought to our clinics with phlyctenulosis are usually not puny and ill nourished; on the contrary, they are commonly well nourished, and not infrequently have ruddy cheeks. Nine times in ten we find, as evidence of systemic disorder, in addition to the ocular inflammation, facial eczema, eczema perhaps elsewhere, and very often an eczematous nasal catarrh. On inquiry it will be learned that they are fed on nearly everything that a child should not eat, and that they are much too closely confined in rooms or dwellings that are thoroughly insanitary. Further, it will often be found that their tongues are furred, their bowels in a torpid condition, and that their stools are foul-smelling.

Perhaps I have already said enough to make it evident that I am a firm believer in the view formerly held by most ophthalmologists, and especially by German ophthalmologists, that phlyctenular ophthalmia, certainly as it is encountered in children, is an ocular eczema, and that it has just as much, and just as little, to do with tuberculosis as has the facial eczema which is its usual accompaniment.

Like the attendant eczema, phlyctenulosis is certainly the result of an endogenous infection, and without doubt—in my mind, at all events—this infection is from the alimentary canal—intestinal intoxication, as it is phrased nowadays. The investigations of Weeks and others, who have usually found the *Staphylococcus aureus* or *albus* present in the phlyctenules, as well as in the eczematous nodules, make it clear that these are the micro-organisms which, having gained entrance to the blood-stream, are commonly responsible for both the skin and the ocular lesions.

How much significance should be attached to the frequent presence of indican in the urine of those suffering with phlyctenular ophthalmia I do not pretend to decide; but investigators who do attach importance to this symptom, and who look for it systematically, report its presence, in large or moderate amounts, in nearly every case of the disease.

If there is any tuberculous affection—or, if you please, pseudotuberculous affection—that responds to local and constitutional treatment in the prompt manner that phlyctenular ophthalmia commonly does, I do not know of its existence. Certainly, true ocular tuberculosis shows no such response, even though tuberculin be employed; on the contrary, it is very intractable and difficult to control.

There are, indeed, few ocular maladies, in my experience, more amenable to judicious therapeutic measures than phlyctenular conjunctivitis and keratitis, and especially is this true of the many cases occurring in childhood. The measures which I employ are regulation of the patient's diet and habits of life, an energetic purgative, which should contain calomel, given at the outset and repeated, perhaps, in forty-eight hours, followed by the administration of syrup of the phosphates of iron, quinin and strychnin—rather than the commonly prescribed syrup of the iodid of iron—and atropin and yellow oxid of mercury ointment as routine local applications. I may add that I feel not a little "disgruntled" if the majority of my patients are not well in considerably less than three weeks.

CONCLUSIONS

The evidence adduced in support of the doctrine that phlyctenular ophthalmia is a tuberculous or pseudotuberculous lesion is far from convincing.

The frequency with which the subjects of phlyctenulosis give a positive reaction to diagnostic tuberculin tests is of little significance in view of the fact that the same tests show a scarcely smaller percentage of positive reactions in healthy persons.

There is excellent authority for the contention that "until some responsible observer has demonstrated the presence of the tubercle bacillus in an extended series of phlyctenules," or, at least, until it has been shown to be sometimes present, the assertion that the affection is, in any sense, tuberculous is without warrant.

In the present state of our knowledge of the etiology of phlyctenulosis, the employment of tuberculin as a therapeutic agent in this affection is unjustifiable, not only because the ill-considered use of tuberculin is capable of doing much harm, but also because the clinical evidence shows pretty clearly that, if it is not actually harmful, it surely is not helpful. Definite clinical signs of the existence of tuberculosis, apart from the ocular inflammation, may justify the administration of tuberculin, but even in such circumstances the effect on the eye could be only indirect.

As phlyctenulosis is essentially a disease of childhood, and the typical cases occur not in adult life, but in children, it is from the study of these cases that trustworthy conclusions as to the etiology of the affection are to be drawn. The study of these childhood cases shows, from the almost constant association of facial eczema with the ocular inflammation, that phlyctenular ophthalmia, as was formerly very generally held, is an ocular eczema, due, for the most part, like the facial eczema, to intestinal intoxication, and that tuberculosis is seldom, if ever, an etiologic factor.

Cathedral and Howard Streets.

ABSTRACT OF DISCUSSION

DR. W. E. GAMBLE, Chicago: It is most timely that Dr. Theobald has called our attention to this subject in the way he has. I believe the use of tuberculin in phlyctenular disease is not justified. In my hands, patients get well without tuberculin as quickly as with it. That this disease is tuberculosis is largely speculation. We are no nearer to-day knowing the etiology of these cases than we were forty years ago. There is some basis for the conclusion that this is ocular eczema, and yet we see cases with palpable cervical glands as the only comitant. The only cases of this disease that might possibly warrant the use of tuberculin would be when large, soft cervical glands, i. e., tuberculosis glands are present.

DR. A. E. DAVIS, New York: While the tubercle bacillus is not yet known to be the direct cause of phlyctenular ophthalmia, yet the tuberculotoxins are capable of causing the trouble. Phlyctenular ophthalmia is the result of some grave constitutional dyscrasia, and is not a simple affection of the eyes brought about by intestinal intoxication, and curable in a few days by regulation of the diet and the patient's habits, the giving of calomel and tonics, and local treatment with atropin and yellow mercuric oxid ointment. It is a grave disease, so far as sight is concerned; and, while the prognosis is favorable so far as concerns any single attack it is rendered unfavorable, as a whole, by the frequent recurrences.

In persons who have had many recurrences of conjunctivitis eczematosa the corneae often bear signs of past

attacks. Thus the sight is impaired, squint or myopia often develops, and children fall behind in development. A frequent outcome is secondary blindness, often many years after the inflammation has passed, representing the after-results of the corneal scars with inclusion of the iris.

1. Dr. Theobald entirely overlooks the fact that many healthy persons are infected with tuberculosis. Hamburger has shown by post mortem on 848 children, that "from newborn infants up to 14 years, an average of 40 per cent. had been infected. Infection up to 3 months of age in only 4 per cent., steadily increased with age until from 11 to 14 the percentage reached 70. The distinction between infection and clinical disease in these cases is important. It is significant that phlyctenular ophthalmia is rarely seen in children under 1 year. Stomach disturbances are most frequent up to this age, while tuberculous infections are fewest. Stomach troubles, therefore, seem not to be the true cause.

2. In the forty cases in which Dr. Vaughan and myself reported "cures" only after a "few weeks" treatment, even in acute cases, we continued the treatment, after the phlyctenules had disappeared, to prevent recurrences. The phlyctenules would often disappear in a few days, but no case is really cured until the patient reaches maturity, and sometimes not then.

3. Focal reaction to my mind is positive evidence of the tuberculous nature of the disease. This is most impressive, when, following the primary reaction of a diagnostic dose, the phlyctenules on the third or fourth day melt away as by magic. These patients should not be considered cured on the first disappearance of the phlyctenules, and subsequent smaller doses should be given to complete the cure.

Dr. Theobald thinks it significant that neither Dr. Tivnen nor Dr. Vaughan and I observed a single instance of focal reaction in the ninety cases reported by us, from the therapeutic injection of tuberculin. Dr. Vaughan and I purposely refrained from giving too large therapeutic doses, in order to avoid decided reactions. Focal reaction to tuberculin injections can be explained on no other ground than as the action of a true antigen on the specifically tuberculous diseased eye.

4. He who does not believe in the administration of tuberculin until the clinical signs of tuberculosis are present, fails to recognize the most essential feature of the tuberculin treatment. I would just as soon delay treatment in a suspected case of syphilis, after a positive Wassermann, until clinical signs of that disease appeared.

Dr. George H. Derby, Boston: With regard to the necessity of showing the tubercle bacillus in the phlyctenules, I will remind you of the difficulty of finding the tubercle bacillus in chronic tuberculosis of the eye. Certainly the tubercle bacillus which may be responsible for phlyctenule is very different from the tubercle bacillus responsible for acute tuberculosis of the eye and also in chronic ocular tuberculosis. The pathologic picture is atypical, but the fact that it is not typical does not prove that these lesions may not be tuberculous. I have seen a few cases in children starting as a phlyctenular keratitis and later on becoming a deep-seated, chronic ocular tuberculosis. I recently talked with one of the social workers of the Massachusetts Charitable Eye and Ear Infirmary to whom the phlyctenular cases had been assigned on account of her previous experience in a tuberculosis hospital. She called attention to the fact that in a large percentage of the families she visited in which there was phlyctenular disease, one or more members of the family showed tuberculosis. Even if we are not sure that phlyctenular disease is actually due to tuberculosis it would be better if we assumed that it was, because the problem is essentially the problem of tuberculosis. If the children are treated as tuberculous they recover much more quickly and it is better for all concerned. In long-standing cases that are resistant and show repeated attacks of the disease, there is nothing better than sanatorium treatment. If the patients can be sent to a sanatorium for three, six or nine months they come back entirely different children and are more apt to be free from the disease afterwards.

Dr. Harry Vaughan, Morristown, N. J.: I wish to say concerning the point that the germ cannot be found in the lesion, that the products or ferments of tuberculosis do not digest surrounding tissues, as do the products of the staphylococcus, streptococcus and other bacteria. I think that fact makes it difficult to find the germ. Possibly the germ is not present, but the by-products cause the lesion. We do not give the tuberculin treatment to every child. We study our cases carefully to see whether tuberculous symptoms predominate. We examine the glands and take the temperature, and surely the local, the focal and the constitutional effect of the tuberculin test must mean something. We have had cases in which in twenty-four hours the lesions would be lighted anew. In many instances we could find tuberculosis in two or three generations. I really believe when tuberculous symptoms predominate, when we have a local, focal and constitutional von Pirquet, with large glands and a tuberculous history, tuberculin will be found to be not a sovereign remedy, but a great help, as much so as the Flexner serum in meningitis. It has not cured all the cases but it has reduced the mortality. So with tuberculin.

Dr. Richard J. Tivnen, Chicago: Dr. Theobald is correct when he insists that every item of Koch's law be fulfilled before the tuberculous etiology of phlyctenulosis be accepted. Some, however, are unwilling, even in the absence of direct confirmation, lightly to cast aside the clinical evidences exhibited by these cases, which suggest some type of tuberculous origin. The symptom-complex exhibited by these cases, the clinical course of the malady, its predilection for the poorly nourished, its glandular complications, its association with tuberculous processes in other parts of the body, its tendency to recurrence, its response to tuberculin—strongly support the theory of tuberculosis, even though alone they are not conclusive. What positive proof is at hand conclusively to determine that phlyctenulosis is produced by intestinal intoxication alone? That the tuberculous theory has not as yet been scientifically established is not a reason for ignoring all the strongly suggestive evidences in its favor. There are many reasons why final judgment on this question should be withheld. We still have much to learn in our clinical observations and interpretations, and particularly in our laboratory diagnoses. May it not be that the refinements of diagnosis necessary in this investigation have not been sufficiently exhausted; that some anatomic variation of the ocular tissue presents peculiarities not yet recognized or understood; that some vagary of the invading organism presents difficulties in the way of establishing its identity; and may not the tuberculous process itself exhibit vagaries which we are unable, with our present methods of investigation, to discover? Is it wise, therefore, lightly to cast aside a theory of etiology which has considerable evidence in its favor, simply because it lacks confirmation? Dr. Theobald refers to eleven cases which my table reports as existing "three months or less" and, applying my statement that none were cured in less than three weeks, observes that it "affords but poor evidence of the value of the treatment employed," and further that because other constitutional and local measures were also used, it is difficult to escape the conviction that the tuberculin was a definite handicap to the other therapeutic measures, and that the results would almost surely have been more satisfactory had it not been employed. Many difficulties surrounded the treatment of my cases; the patients were mostly ambulatory and a regular, systematic plan of treatment was impossible. It may thus be understood why many of them failed to show improvement in less than three weeks. Dr. Theobald will see, in my final report of these cases, that not one of the eleven failed to show improvement and five of them were listed as "cured." These results are fully as satisfactory as the usual methods advocated that fail to check the recurrences of this disease, which are the crux of the problem, for with each recurrent attack, perceptible inroads on the patients' visual acuity results.

In view of the almost absolute failure of the present treatment to prevent recurrences of this disease, the advocates of the tuberculous theory feel the need of a more definite

plan of therapeusis and believe that sooner or later the theory of tuberculosis as the dominant etiologic factor in the disease will be recognized, and that tuberculin will constitute the essential therapeutic agent in its treatment.

DR. WALTER B. WEIDLER, New York: I spoke on this same subject at Minneapolis when discussing Dr. Davis' paper, and I wish again to put myself on record as believing thoroughly in the use of tuberculin from my experience in the Manhattan Eye and Ear Infirmary. I think the attitude assumed by Dr. Theobald with regard to phlyctenulosis is unfortunate. Three years ago Dr. Bruns thought none of these cases were tuberculous. Dr. Tivnen thinks that almost all of them are and Dr. Theobald that probably few or none are. I think the fact that the tubercle bacillus cannot be demonstrated is a poor argument. Dr. Gamble says he would be willing to use tuberculin in cases with enlarged glands. As far as I know, the tubercle bacillus has been demonstrated in these glands before they have broken down and pus has formed. My feeling is that in cases of phlyctenulosis with recurrences the majority of the patients will give a history of tuberculosis in some member of the family if we will only take the trouble to trace it back. That has been my experience in my work at the Manhattan. At present I believe that many of these cases are due to a toxin or an endotoxin from a tuberculous focus somewhere else in the body, not of necessity in the eye. In the eye we can readily see the manifestation of any tuberculous process in other tissues of the body. The one reason that so many do not believe in tuberculin therapy in these cases is that they do not follow their cases long enough. I have seen probably three hundred cases in the last three years. They will recur, but my feeling is that with tuberculin we produce an indefinite immunity, and just how long it lasts we do not know. With a tuberculous tendency and inheritance I do not believe we can eradicate it by one course of tuberculin treatment no matter what the manifestation is in the eye. I made the statement at the New York Academy of Medicine last winter that when I had a positive von Pirquet I have never failed to cure the lesion, whether a tuberculous choroiditis or iridocyclitis, of which latter we have four under observation at present, or the severest form of keratitis or ulcer of the cornea. Unfortunately this statement must be corrected as I have had, since that time, a youth of 10 with fibrous connective tissue exudate in the pupillary area, which did not absorb under tuberculin treatment but the active iridocyclitis cleared up with the use of tuberculin. This, however, cannot be claimed as a cure due to tuberculin.

DR. THOMAS H. CURTIN, New York: I have seen all of Dr. Weidler's cases and he has seen mine. For the past three years we have been making a systematic study of phlyctenular cases and other cases which we regarded as tuberculous, using usually the von Pirquet test for diagnosis. On the phlyctenular cases over 80 per cent. (in children under 10 years of age) reacted positively to this test. A certain percentage of cases, which, from the general appearance of the patients was due in my opinion to gastro-intestinal conditions, did not react. These cases readily cleared up under the use of calomel, rhubarb and soda and yellow mercuric oxid. But we see also the recurrent cases, and some which had been previously treated by the ordinary method did not return when put on tuberculin, showing that the tuberculin treatment had proved more efficacious than the ordinary treatment. I do not believe that all phlyctenular cases are tuberculous, but that phlyctenular conjunctivitis is allied to tuberculosis, as are cases of strumous or scrofulous diathesis. These cases may not be tuberculous *ipso facto*, but dependent on an underlying condition which may be tuberculous and which I believe in 80 per cent. is tuberculous. As. Dr. Davis said, the injection of tuberculin into the arm does not mean that the tuberculin is disseminated throughout the tissues of the body, but that it stays at the point of injection and manufactures antibodies which neutralize the toxins of the tubercle bacilli and destroy the tubercle bacilli themselves. In my experience and in the observation of a great many others I have yet to see or hear of any ill effects produced by tuberculin either in the use of the von Pirquet test or the subcutaneous test for diagnosis or in the administration of tuberculin when properly used for the treatment of any tuberculous disease of the eye. Tuberculin was formerly used in too large doses. We should begin with from 1/80,000 to 1/50,000 mg., gradually increasing, keeping the patients under treatment for from six months to two years. We cannot cure them in a short time, and they should return again at intervals and have the tuberculin injected in order to keep up the production of these antibodies, which is the keynote of the therapeutics.

DR. WILLIAM TARUN, Baltimore: Four facts should be borne in mind in considering phlyctenular ophthalmia: 1. We have no way of making a diagnosis of lymphatic tuberculosis except by the skin reaction or the subcutaneous test. 2. The anatomic structure of the conjunctiva is practically the same as that of adenoids and tonsils. 3. The enlarged glands are caused by the secondary infection by pyogenic organisms. 4. In all cases of phlyctenulae we have intestinal intoxication as indicated by the presence of indican in the urine.

Dr. Theobald has stated that, so far, we have no positive evidence that phlyctens are tuberculous because of the absence of the tubercle bacilli. It is evident that there is a tuberculous basis plus a secondary infection by a pyogenic organism—*Staphylococcus aureus*. To those who are not yet convinced that there is a tuberculous basis I would suggest the study of an article on this work done by Rubert (*Monatsbl. f. Augenheilk.*, September, 1912). It is a continuation of work done by some one else in which he has produced tuberculosis in lower animals, using a normal one as control. Instillations of staphylococcus cultures or toxins into the conjunctival sac of these animals produced phlyctens in a majority of the tuberculous and none in the normal. These phlyctens had the same histologic structure as that of Fuchs. The presence of the tubercle bacillus is not known. As to treatment, tuberculin should be used when we cannot handle the cases in any other way. The initial dose will depend on the reaction by the von Pirquet test. In those cases in which you are afraid to use tuberculin I would suggest the treatment outlined by Dr. Derby—that the cases be sent to a sanatorium. I grant that the treatment as outlined by Dr. Theobald does some good. They are relieved from their symptoms, but they still have a more serious condition remaining—a tuberculosis. A case in point. I was called to see a plethoric, healthy-looking child of 2½ years with a typical phlycten for which I prescribed the usual treatment, but advised the physician that the child had a tuberculosis as the basis of the trouble. Three months later the child died of a tuberculous meningitis. Those of you who do not recognize the tuberculous basis of phlyctenular ophthalmia are not doing all you should do for your patient.

DR. MARK D. STEVENSON, Akron, O.: The one thing that demands challenge in the conclusions of Dr. Theobald is whether or not this disease is tuberculous. This can not be settled; it must be speculative. The elusiveness of the germ is well understood, not being necessary in the lesion. The other symptoms of tuberculosis are present. The full pathology of tuberculosis like that of many other diseases is not entirely written. When it is I think it will be found that phlycten is one of the tuberculous lesions, and the thing that especially appeals to me, although it might be speculative, is that it responds to general tuberculosis treatment. I have seen these conditions respond quickly and I think it would be most unfortunate if the idea should go out from this section that it was at all proved that these lesions are not of a tuberculous nature.

DR. SAMUEL THEOBALD, Baltimore: I still think there are very few maladies of the eyes that respond so promptly and so satisfactorily to treatment as phlyctenular disease. Of course I recognize that there are exceptions to this rule, but it does not strike me that it is a very serious affection. The patients that recover do not take three weeks. The majority are cured within little more than one-third of this time. When recurrences take place this is due, in the majority of cases, to the carelessness of parents or those in charge of patients

in not following out the directions of the medical attendant. I do not think I could have understood Dr. Davis correctly when he said a positive Wassermann reaction and a positive von Pirquet, so far as treatment is concerned, are equivalent. Everybody knows that in the absence of chlinical signs of tuberculosis a positive tuberculin reaction does not call for treatment for tuberculosis. It does not mean clinical tuberculosis at all, but that at the same time a tuberculous infection of the system has occurred. On the other hand, a positive Wassermann means syphilis and is a clear indication for antisyphilitic treatment. Dr. Stevenson spoke especially of the elusiveness of the tubercle bacillus. The authorities I have quoted do not pretend to say that the bacillus must be found every time. One says it must be found some times. The other says that, at least, some responsible investigator should find it in a series of cases. After I had written the paper I wrote letters to seven eminent authorities on tuberculosis throughout the country asking their experience as to the association of phlyctenular ophthalmia with tuberculosis. In their replies several spoke of having encountered cases of phlyctenulosis in children in the so-called scrofulous condition, and in association with glandular and bone lesions of a tuberculous nature; but they all agreed that it was seldom found in association with pulmonary tuberculosis. One of the most definite replies received was from Dr. Cullen, in charge of the Maryland State Tuberculosis Sanatorium. He wrote: "We see surprisingly little phlyctenular disease in association with tuberculosis. We have had only six cases in the past year in handling about eight hundred cases of tuberculosis. Of this number fifty were in children. We have had but three cases among our children."

A STUDY OF THE EFFECT ON HETEROPHORIA OF THE CORRECTION OF AMETROPIA

WITH A CONSIDERATION OF SOME ASSOCIATED CONDITIONS *

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This analysis was undertaken to determine the effect on heterophoria of the correction of ametropia. In the development of the paper the relation of other factors to the problem brought in additional data. The opportunity which this afforded of analyzing these correlated conditions was embraced and the results incorporated.

The material used was supplied from my private case-records. No case was used unless at least a month had elapsed between the original and final tests. In more than two-thirds of the cases several years intervened, the second determination being made on the patient's return for a change of glasses. Only cases were used in which there was equal and normal, or better than normal, vision in each eye, and in which no actual deviation of the visual axes existed. No case in which prisms had been worn was considered available. Presbyopia was excluded. Only cases were used in which uniform tests had been employed in the various determinations.

As there is a marked discrepancy between some of the results given here and those heretofore published by other writers, it is well to state the methods employed by me in making the various tests. In testing both the far (6 meters) and the near (1/3 meter) status of the muscle balance a colored Maddox rod was used, a light 1 cm. in diameter serving for the distant object and a small electric lamp for the near object. Loose prisms or the phorometer, along with the Maddox rod, was used to measure the degree of imbalance for both the vertical and lateral muscles at infinity and the rotary prism at near. Abduction and adduction were determined by loose prisms. In the past few years when a patient with but slight effort reaches an adducting power of 15 degrees it has been recorded 15 + as experience has shown that these patients readily acquire a high prism adduction by exercise or by knack.

TABLE 1.—MUSCLE BALANCE AT FIRST AND AT FINAL TEST

Ametropia	Far — First Test	Far — Final Test	Near — First Test	Near — Final Test	Hyperph. Per Cent.	Ab.	Ad.
H+Ah	Es. 2.5	Es. 1.75	Ex. 5.0	Ex. 4.5	26	6.0	17
H+Ah	Ex. 1.62	Ex. 1.5	Ex. 8.0	Ex. 9.0	59	6.5	14
H+Ah	Orth. 0.0	Ex. .37	Ex. 6.5	Ex. 6.0	40	6.0	17
H+Ah	Es. 2.0	Es. 2.62	Es. 6.62	Es. 3.62	25	5.5	20
H+Ah	Es. 6.0	Es. 4.62	Es. 2.5	Ex. .75	57	7.0	20
Ah	Es. 1.37	Es. 1.0	Ex. 4.0	Ex. 4.5	50	6.0	..
Ah	Ex. 2.50	Ex. 1.87	Ex. 7.0	Ex. 4.0	50	...	..
M+Am	Es. 2.25	Es. 1.50	Ex. 1.5	Ex. 1.25	35	6.0	19
M+Am	Ex. 2.75	Ex. 3.0	Ex. 10.0	Ex. 11.0	61	7.0	10
Amh	Es. 1.75	Es. 1.62	Ex. 2.37	Ex. 4.75	20	7.0	12
Amh	Ex. 1.62	Ex. .62	Ex. 13.0	Ex. 13.0	20	7.0	14
Amh	Orth. 0.0	Ex. .50	Ex. 7.0	Ex. 7.0	20	7.0	15
Anisom	Es. 2.0	Es. 1.37	Ex. 6.0	Ex. 5.62	50	6.0	16
Anisom	Ex. 2.5	Ex. 1.25	Ex. 9.0	Ex. 10.0	40	7.50	12

The average hypermetropia in the cases of H+Ah with esophoria for distance and exophoria for near equals 1.50 D.
The average hyperopia in the cases of H+Ah with exophoria for distance and near equals 1.12 D.
The average myopia in the cases of M+Am with esophoria for distance equals 1.87 D.
The average myopia in the cases of M+Am with exophoria for distance equals 2.12 D.

For the purpose of study the cases were divided into groups having like ametropia, and these were subdivided into groups having similar muscle imbalance for distance (Table 2).

TABLE 2.—GROUPS AND SUBGROUPS OF CASES

Ametropia	No. of Cases	Muscle Imbalance for Distance	Per Cent.
H+Ah	236	Orthophoria	10
		Esophoria	62
		Exophoria	28
Ah	20	Esophoria	60
		Exophoria	40
M+Am	87	Esophoria	60
		Exophoria	40
Amh	30	Orthophoria	24
		Esophoria	52
		Exophoria	24
Anisometropia	24	Orthophoria	15
		Exophoria	25
		Esophoria	60

There were 145 cases of H + Ah, with esophoria for distance and exophoria for near. The average esophoria for distance at the first test was 2.5°, and at the final test 1.75°. The average exophoria for near at the first test was 5°, and at the final test 4.5°. Average abduction was 6°, adduction 17°. Hyperphoria in 26 per cent.

There were 66 cases of H + Ah, with exophoria for distance and near, greater for near. Average exophoria for distance at the first test, 1.62°, at the final

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test 1.5°. Average exophoria for near at first test 8°, at the final test 9°. Average abductions 6.5°, adduction 14°. Hyperphoria in 59 per cent.

There were twenty-one cases of H + Ah with orthophoria for distance and exophoria for near. The average exophoria for distance at the final test was 0.37°. Average exophoria for near at the first test 6.5°, at the final test 6°. Average abduction 6°. Average adduction 17°. Hyperphoria in 40 per cent.

There were thirteen cases of H + Ah in which there was esophoria for both distance and near with a greater degree for near. The average esophoria for distance at the first test was 2°, at the final test 2.62°. The average esophoria for near at the first test was 6.62°, at the final test 3.62°. Average abduction 5.5°. Average adduction 20°. Hyperphoria in 25 per cent.

There were ten cases of H + Ah with esophoria for both distance and near with a greater degree for distance. The average esophoria for distance at the first test was 6°, at the final test 4.62°. The average esophoria for near at the first test was 2.50°. This was converted into an average exophoria at the final test of 0.75°. Average abduction 7°. Average adduction 20°. Hyperphoria was present in 57 per cent.

There were twelve cases of Ah with esophoria for distance. The average esophoria for distance at the first test was 1.37° and at the final test 1°. The average exophoria for near at the first test was 4° and the final 4.5°. Average abduction was 6°. Hyperphoria was present in 50 per cent.

There were eight cases of Ah with exophoria for distance. The average exophoria for distance at the first test was 2.50° and at the final test 1.87°. The average exophoria for near at the first test was 7° and at the final 4°. Hyperphoria present in 50 per cent.

Of eighty-seven cases of M + Am, fifty-six had esophoria for distance and thirty-one had exophoria for distance.

Of the fifty-six cases of M + Am with esophoria for distance the average esophoria at the first test was 2.25° and at the final test 1.50°. The average exophoria for near at the first test was 1.50° and at the final 1.25°. Average abduction 6°. Average adduction 19°. Hyperphoria in 35 per cent.

There were 31 cases of M + Am with exophoria for distance, and greater exophoria for near. The average exophoria at the first test was 2.75°, and at the final test was 3°. The average exophoria for near at the first test was 10°, and at the final test 11°. The average abduction was 7°. Average adduction was 10°. Hyperphoria was present in 61 per cent.

There were 30 cases of Amh. In 16, with esophoria for distance. The average esophoria for distance at the first test was 1.75°, and at the final test 1.62°. The average exophoria for near at the first test was 2.37°, and at the final test 4.75°. The average abduction was 7°. The average adduction 12°. Hyperphoria was present in 20 per cent.

There were 7 cases of Amh with exophoria for distance and near. The average exophoria for distance at the first test was 1.62°, the average at the final test was 62°. The average exophoria for near at the first test was 13°, and at the final test 13°. The average abduction 7°. The average adduction 14°. Hyperphoria was present in 20 per cent.

There were 7 cases of Amh with orthophoria for distance and exophoria for near. The average exophoria at the final test for distance was 0.50°. The average exophoria for near at the first test was 7°, and at the final test 7°. Average abduction was 7°. The average adduction 15°. Hyperphoria was present in 20 per cent.

There were 24 cases of anisometropia, in which the average difference in refraction of the two eyes was 2 D. In 15 there was esophoria for distance. The average at the first test was 2°, and at the final test 1.37°. The average exophoria for near at the first test was 6°, and at the final test 5.62°. The average abduction was 6°. The average adduction was 16°. Hyperphoria was present in 50 per cent.

In 6 cases of Amh there was exophoria for near and far, greater for near. The average exophoria for near at the first test was 2.5°, at the final test 1.25°. The average exophoria for near at the first test was 9°, and at the final test 10°. The average abduction was 7.5°, and adduction 12°. Hyperphoria was present in 40 per cent.

An analysis of these findings with a view of determining the influence of the correction of the ametropia on associated heterophoria shows that: When in H + Ah esophoria existed for far and exophoria for near the esophoria was reduced on the average of 0.75°, or about 33 per cent. of the original amount, whereas the exophoria which was present for near was reduced 0.5°, or 10 per cent. of the original amount, a negligible amount. The esophoria in this status of the muscles has been held by some to be an apparent esophoria, the real difficulty being an insufficient convergence power. The correction of the H + Ah would tend further to reduce the positive portion of convergence, and we might expect to find the exophoria for near, at least, somewhat increased; but it remained practically unchanged. The esophoria, however, was reduced, rather indicating that it arises from the convergence associated with the accommodation required for distinct distance vision.

When exophoria existed for both distance and near with a greater amount for near, practically no change occurred in the distance exophoria, and the exophoria for near was increased 1°, or 12 per cent. of the original amount. Here we have a convergence insufficiency with a beginning divergence excess, and the correction of the H + Ah would tend to increase the exophoria for near by reducing the call on the accommodation. Practically the only cases calling for prism exercise fell within this group. Almost all were relieved of symptoms, and in nearly all of those in which the exophoria was not greater than 2° for distance, it was either overcome or a low esophoria was established; but this did not persist for any great length of time after the prism exercise was discontinued. The relation of prism abduction and adduction was in almost every instance 1:2 (6:13), not very different, however, from those in which prism exercise was not required (6:15).

When orthophoria existed for distance and exophoria for near, an average exophoria of 0.37° developed for distance, and the exophoria for near increased 2°, or 33 per cent. of the original amount.

Here we have practically the same condition and the same result as in H + Ah with exophoria for distance and a greater exophoria for near.

When esophoria existed for both distance and near, but was greater for near, the esophoria for distance decreased on the average 0.62°, or 33 per cent. of the

original amount, and the esophoria for near was decreased, on the average, 3°, or 45 per cent. of the original amount.

These are cases of convergence excess in which the esophoria for near is decidedly decreased by correction of the H + Ah.

When esophoria existed for distance and near, but was greater for distance, the esophoria for distance decreased, on the average, 1.37°, or 23 per cent. of the original amount, and the esophoria for near was converted into an exophoria of 0.75°, a change of 133 per cent.

This group represents a convergence excess with a relative divergence insufficiency, the correction of the ametropia markedly decreasing the esophoria for near.

In Ah with esophoria for distance, the correction of the ametropia had no effect on either the distance or near heterophoria.

In Ah with exophoria for distance, the exophoria for both distance and near was appreciably diminished, probably the result of the improvement in vision from the correction of the astigmatism.

When in M + Am esophoria existed for distance and exophoria for near, the esophoria for distance was reduced 0.75°, or 33 per cent. of the original amount, and the exophoria for near was reduced 0.25°, or 16 per cent. of the original amount.

The cases in this group are largely accommodative convergence insufficiency without the later-imposed divergence excess. The decrease in the esophoria for distance was due to the beginning development of a divergence excess, 16 per cent. of the cases showing a change from esophoria to exophoria, and 50 per cent. a decrease in the esophoria for distance. The average exophoria for near was but little influenced, but the cases showing a moderate amount of exophoria for near at the first test nearly all showed an increase in the exophoria.

When in M + Am exophoria existed for distance and for near, the exophoria for distance was reduced 0.25°, or 9 per cent. of the original, and the exophoria for near was increased 1°, or 10 per cent. of the original.

In this group there was a convergence insufficiency and a divergence excess, the elements making for the development, in time, of a divergent strabismus. The average change was so slight, however, as to indicate an arrest of this progress, although in a few cases it had made advances.

When in Amh esophoria existed for distance and exophoria for near, the esophoria remained practically unchanged and the exophoria for near increased 2.37°, or 100 per cent. In this group the slight esophoria for distance which was present may be considered a static condition. The exophoria increased to a marked degree, and this may be due to the accommodative effort occurring in the course of the altering refraction which these cases undergo.

When in Amh, exophoria existed for distance and for near, but was greater for near, the exophoria for distance was reduced 1°, or 60 per cent. of the original, and the exophoria for near remained unchanged.

When orthophoria existed for distance and exophoria for near, exophoria of 0.50°, or 60 per cent. of the original, developed, and the exophoria for near remained unchanged.

These two groups show but little change, probably because these cases showed little change in the refraction in the very few cases in which an opportunity had been presented to re-refract after the lapse of time, and a disturbance of the relation between accommodation and convergence was not induced by the correction of the refraction error. When the few cases were assembled into three groups, the number in each was so small that deductions were difficult to make.

When in anisometropia esophoria existed for distance and exophoria for near, the esophoria for distance decreased 0.50°, or 25 per cent. of the original, and the exophoria for near was practically unchanged.

When in anisometropia exophoria existed for near and distance, but greater for near, the exophoria for distance decreased 1.25°, or 50 per cent. of the original, and the exophoria for near increased 1°, or 11 per cent.

These cases showed no greater degrees of heterophoria than the other forms of ametropia, and were little changed by the correction of the error of refraction, except that those showing exophoria for distance had this decreased by equalization of the visual acuity of the two eyes.

In a short series of cases such as was here analyzed, it is possible for a few cases of marked heterophoria to produce an average relatively too high or vice versa. It was thought that this might, in a measure, be a possible source of error, and be neutralized by giving the percentages, in the two main groups, M + Am and H + Ah, of cases showing a similar change. These groups were further analyzed to determine the relation existing between the abducting power and the distance imbalance.

Of the cases of H + Ah with esophoria for distance and exophoria for near, in 25 per cent. there was an increase in the esophoria, the average being 2.37°, and the greatest 4°. In 57 per cent. there was a decrease of esophoria, the average being 2°, the greatest 9°. In this series there was a much larger number of cases showing an appreciable decrease of esophoria than was the case in other of the H series. The average abduction equaled 6°. In 30 per cent. in which it was above the average, the esophoria equaled 2.37°. In 70 per cent. in which it was below the average, the esophoria equaled 2.62 per cent. In a series in which abduction was 5° or below the average, esophoria equaled 3.5°, and in a series in which it equaled 7° or more than the average, esophoria equaled 1.75°.

Of the cases of H + Ah with exophoria for distance and near, in 35 per cent. there was an increase in the exophoria. The average was 1.37°, and 40 per cent. showed a decrease, the greatest being, 2°, the least 1°.

The average abduction was 6.5°. In 50 per cent. it was above the average, and in 40 per cent. it was below the average, but in both the average exophoria equaled 1.5°. In a series in which it was 5° or below, the average exophoria for distance was 3.5°.

Of the cases of M + Am with esophoria for distance, in 30 per cent. there was an increase in the esophoria, the average increase was 1.12°, and the greatest was 3°.

Abduction was below the average in esophoria associated with ametropia of any form, and was of equal degree both in the myopic and hyperopic groups.

Abduction was above the average in exophoria associated with ametropia of any form, and was about equal in exophoria for distance both in the hyperopic and the myopic groups.

Abduction was above the average and of equal degree in Amh, no matter what the distance balance.

In 45 per cent. there was a decrease; the average was 2.25°, the greatest 7°.

From the frequency with which right hyperphoria occurred in the foregoing cases, it was evident that right hyperphoria prevailed to a marked degree. As in a tabulation of one hundred cases on another occasion the percentage of right hyperphoria was found to be about 70 per cent., a further series of 200 cases, none of which had been employed in the previous computations, was used. In 105, or 52 per cent., there was orthophoria for the vertical muscles. In 95, or 48 per cent., there was hyperphoria. In 76 per cent. of these it was R. H., and in 24 per cent. L. H. As in making the tests the rod had been invariably placed before the right eye, it was thought that this might in some way be the cause of the preponderance of R. H., but Dr. Holloway found the same preponderance of R. H. when the rod was placed in front of the left eye. Possibly the fact that the right eye is usually the dominant eye is a factor. Forty-six per cent. of H + Ah, 50 per cent. of Ah, 53 per cent. of M + Am, 40 per cent. of H, 38 per cent. of Amh and 50 per cent. of anisometropia showed hyperphoria.

In 74 cases (78 per cent.) it was less than 1°, in 38 cases (40 per cent.) it was 1.4°, in 9 cases (9.5 per cent.) it was 1°, in 3 cases (3 per cent.) it was 1.5° and in 5 cases (5 per cent.) it was 2°. In 4 cases (4 per cent.) it was over 2°. It was found that in less than 1 per cent. was the hyperphoria appreciably altered by correction of the ametropia.

Hyperphoria was present more often in exophoria for distance than in esophoria for distance in the proportion 46:36. It was least frequent and occurred in the same ratio (20 per cent.) in all forms of heterophoria associated with Amh.

CONCLUSIONS

On the whole, it cannot be said that the correction of ametropia greatly influences the associated heterophoria, some of the change here noted being the result of the natural progress of such associated conditions, as evidenced by the fact that a study of a series in which but two weeks intervened between the tests before and after the ametropia had been corrected showed even less change. In a short series of H + Ah with esophoria for distance, exophoria first test 1.37°, final test 1.25°; exophoria for near, first test 6.5°, final test 6.5°.

Considering only the heterophoria, it may be said that the correction of the ametropia reduces the esophoria for distance when associated with H + Ah, and tends to increase the exophoria for near.

When esophoria exists both for distance and near, the heterophoria at both distances will be reduced and the esophoria for near may be converted into an exophoria. Esophoria for distance and likewise an exophoria for near will be reduced by the correction of M + Am.

Exophoria for distance and near will be practically unchanged by the correction of a coexisting M + Am.

Esophoria for distance will be little changed or may go over into an exophoria by the correction of an associated Amh. An exophoria for near, under like conditions, will be increased.

Exophoria for distance in anisometropia will be decreased by the correction of the ametropia.

In no group of cases did the average abduction exceed 7°; the average in all groups was 6.5°.

Hyperphoria occurs in less than 50 per cent. of cases of ametropia. It is somewhat more frequent in H + Ah. In more than three-fourths of the cases it is less than 1°, and in less than 10 per cent. it is 2° or more. Right hyperphoria vastly predominates.

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ABSTRACT OF DISCUSSION

DR. A. E. DAVIS, New York: The value of Dr. Zentmayer's observations are added to also from the fact that the tests have been uniform, have been made by one surgeon and the cases are from private practice, insuring a greater degree of intelligence and help from the patient than can possibly be obtained from hospital subjects. It seems to me that Dr. Zentmayer does not give himself due credit, nor does he attach enough importance to the influence that the proper correction of ametropia has on heterophoria. In his conclusions, he says: "On the whole, it cannot be said that the correction of ametropia greatly influences the associated heterophoria, etc. Turning to the body of the paper and looking at that group of cases of H and Ah (by far the largest group in the series, 145 cases), in which there was an associated esophoria for the distance and an exophoria for the near, we find that the correction of the refraction reduced the esophoria in the average ¼ of a degree, or about 33 per cent. of the original amount, whereas the exophoria which was present for near was reduced ½ degree, or about 10 per cent. of the original amount, a negligible amount." Now I hold that an improvement of 33 per cent. in the esophoria for far and 10 per cent. in the exophoria for near, both of which improvements are in the direction of orthophoria, is a very important factor in helping to bring about relief from asthenopia, if the asthenopia is due to the so-called muscle imbalance. Again, in other groups, "when esophoria existed for both distance and near, but was greater for near, the esophoria for distance decreased on the average 0.62 degrees, or 33 per cent. of the original amount, and the esophoria for near decreased, on the average, 3 degrees, or 45 per cent. of the original amount." Take another group of cases reported by Dr. Zentmayer, H. plus Ah., in which esophoria existed both for distance and near, but was greater for distance, the esophoria for distance decreased, on the average, 1.37 degrees, or 23 per cent. of the original amount, and the esophoria for near was converted into exophoria of 0.75 degree, a change of 133 per cent.! Certainly this is a remarkable change, and the influence exerted by the glasses a most decided one. And when we take into consideration that Dr. Zentmayer recorded no higher degree of esophoria than 15 degrees (when it was higher than 15 degrees, he simply added a plus sign to it) this improvement in these cases as measured by other standards would be greater still. While it must be admitted that in some of the subgroups, especially in the myopic cases, the improvement in the direction of orthophoria is small, or even in the opposite direction, yet, on the whole, and particularly in H Ah, and in anisometropia, the class of cases in which asthenopia is most often present, the influence of glasses on the associated heterophoria is decided and in the right direction, for the most part, that is, towards orthophoria. Landolt has justly emphasized, in all his writings, the necessity of a greater quantity of latent reserve force in the muscles of orientation of the eyes than even for the muscle of accommodation, if we may expect the eyes to be used for a long time without fatigue or without asthenopic symptoms appearing. Hence, any factor that tends to increase this reserve force in the muscles of orientation, as the adjustment of correcting glasses, plays a most important rôle in the relief of asthenopia. Dr. Roosa held to the view that, when the refractive errors were corrected by the adjustment of the right glasses, muscle insufficiencies, in the vast majority of instances, corrected themselves, especially in cases of H and H astigmatism and anisometropia. He placed little or

no reliance on prism exercises in these cases, and I must say that my experience coincides with this view. I would mention one other important factor in the treatment of heterophoria, that is, the giving of tonics and looking after the general welfare of the patient. With these two features of the treatment carried out faithfully, rarely indeed is it necessary to prescribe prisms or to operate on the ocular muscles in any degree of latent insufficiency short of manifest deviation.

DR. HIRAM WOODS, Baltimore: There is a form of esophoria which, in my experience, is usually lessened or modified by refraction correction. Esophoria may be due either to defective action of the externi or overaction of the interni. The average abduction or prism power of the external rectus was given a good many years ago by Noyes as from 5 to 8. He thought when it fell below 5 it indicated a definite weakness of the externus itself; when it was above 5 and less than 8, it indicated a normal external rectus prism power, and over 8, an excessive prism power. I have studied out a good many cases that have been affected by hypermetropic correction. After H refraction is corrected, esophoria has lessened or disappeared entirely, provided the abduction is from 5 to 8 degrees, but it scarcely ever disappears when it is less than that. The explanation of esophoria is that the patient has a defective relative convergence. He cannot separate his convergence from his accommodation; consequently in obtaining vision before his refraction error has been corrected the extra innervation of the ciliary muscle goes also to the internal rectus. Then we have got by the phorometer esophoria, which does not mean external weakness at all, but overaction of the internal recti.

DR. EDWARD JACKSON, Denver: The main fact that stands out from Dr. Zentmayer's study is that for each individual there comes to be established, with approximate permanence, a certain ocular balance; as in each eye finally, in the process of development, a certain relation is established between the length of the anterioposterior axis and the curves of the surfaces. Orthophoria is rare, just as emmetropia is rare, but it is an approximation in that direction. The point is that a relation is established that becomes the fairly permanent condition for that individual. Any person with heterophoria overcomes it by his innervation, and so departs from that permanently established condition of rest. In certain cases there is a more continued departure in the interest of single vision; there may be apparent change in the balance from temporary strain. A patient with presbyopia goes too long without having his glasses changed, and comes to one of us when the near point has gone off to 16 or 20 inches, and he has been straining his accommodation. Frequently in these cases I have found a distinct departure toward esophoria, from the balance I had recorded years before. If the patient, however, gets the correction for the presbyopia and uses it for a few weeks he will come back to the previous state of muscle balance, which may be regarded as the permanent state of balance for that individual. A permanent state of muscle balance is not necessarily congenital, but it is established, perhaps, in rather early childhood, or not entirely until the approach of adult life. I would like to see this subject studied from the point of view of age. My impression is, though I cannot give statistics to support it, that heterophoria is decidedly more influenced in young persons, particularly in young children, by the wearing of corrections for ametropia than it is in adults. I think any such study as Dr. Zentmayer's ought, in future, to consider that, and the cases should be classified according to age. Perhaps that would give us more distinct results.

DR. FRANCIS VALK, New York: Some twenty-five or thirty years ago, at a medical congress in Washington, this subject of esophoria for distance and exophoria for near was discussed, and since that time it has been spoken of in various text-books, but I do not know that any one has explained why we should have homonymous diplopia at 20 feet and crossed diplopia at a shorter distance. I was surprised to hear Dr. Stevenson's report of a patient securing more comfort by holding the book to the right or left. In such cases there must be some tendency for the eyes to turn in a certain direction. I have also noticed that the text-books, in treating of the rotation of the eye, have decided on a fixed condition of 55 degrees inward and 50 degrees outward. In several cases I have found, in the right eye, a rotation inward of about 45 degrees, and an outward rotation of 55 degrees; in the left eye, 60 degrees inward and only 40 outward. Now if the standard is correct we have here, unquestionably, an exophoria in the right eye taken alone, and esophoria in the left eye taken alone. Now it seems to me reasonable that, when a person looks in the distance, the left eye is esophoric, from the weak outward rotation. In the near the right eye becomes slightly divergent owing to the weak internus and there is exophoria. There is a decided tendency here for both eyes to turn to the right. I think this explains these cases very clearly. All cases of esophoria in the distance and exophoria in the near invariably show this condition. What to do from this point is interesting. We should not put on prisms for distance or for esophoria, nor prisms for exophoria. When esophoria predominates I put a prism over the left eye only base outward and none over the right and it works very successfully. On the other hand, if the exophoria predominates, I put a prism over the right eye with the base in. In some cases I have put the base out over the left eye and base in over the right. These are patients we cannot very well operate on. They do not show a real reason for operating but do show a reason for prisms. Many of you know the term dextrophoria which I have advanced in these cases. My suggestion was not a very good one because it is a combination of Latin and Greek, instead of Greek alone as it ought to be. But the name simply shows the actual tendency of the eyes to rotate in an abnormal condition similar to that of anaphoria.

DR. SAMUEL THEOBALD, Baltimore: One of Dr. Zentmayer's conclusions caused me some surprise; that exophoria for distance and near will be practically unchanged by the correction of compound myopic astigmatism. If the statement had been as to simple myopia I should have unhesitatingly challenged it; but the fact that astigmatism is associated with the myopia is a saving clause. In such circumstances, the effect on the exophoria I should say would depend on whether the myopia was considerable and the astigmatism slight, or the reverse. If the myopia is at all considerable, its correction will surely lessen the exophoria at reading distance. On the other hand, if there is pronounced astigmatism, the relief of the accommodative effect required to overcome this might more than offset the correction of the myopia. With regard to the influence of the correction of anisometropia on the muscle-balance, I have seen some extraordinary results. One case I published in which a marked divergent squint quickly disappeared, under the influence of glasses which equalized the focus of two very dissimilar eyes. Another striking example of the influence of glasses on muscle balance, is shown in cases that Dr. Zentmayer and all of us have seen, cases of convergent squint in which the squint is absent with convex glasses of 3 or 4 diopters but returns at once when the glasses are removed.

DR. GEORGE H. PRICE, Nashville: I am sorry Dr. Zentmayer did not include the testing of the accommodation in the individual prior to the correction of the vision, because on this point, in my opinion, hinges largely the effect which will be produced by the correction of any defect of vision when it is associated with imbalance. Cases in which we have esophoria for distance and exophoria for near and the exophoria increased with lenses, show that if the accommodation is suspended to determine the entire refractive error and a full correcting lens put on without reference to the amount of accommodation the individual had originally, you are apt to meet with the condition that supervenes in the cases reported by Dr. Zentmayer, because you have an overcorrection of the hypertropic condition. This will be a great inconvenience to the patient when he begins to wear the glasses, and if you make a test within a few weeks before the eyes have become adjusted to the new condition, the patient will show a different disturbance in the muscle balance from the original. Put on a correcting lens of a diopter or more and you have relieved the patient of

the necessity of making that much effort at accommodation and the patient feels the lack and the muscle balance sympathizes with it and is disturbed temporarily. Esophoria for distance and near both were reduced; at times exophoria for distance manifested itself after the correction was on. If both are reduced then in the majority of cases you have the proper correction, but if you have carried your correction too far and you take away from the eye the original impulse to which it was accustomed for a long period of time, to bring about the necessary convergence it lags, because it does not get the proper stimulation, then you have a little bit of exophoria.

DR. WILLIAM H. BATES, New York: I take issue with every conclusion that has been made. I believe most of us recognize that myopia is acquired. We have seen cases of astigmatism acquired. Some of them get better and some get worse. Dr. Zentmayer reported that heterophoria changed. I have also observed changes occur in errors of refraction. I believe that the cause of many cases of heterophoria, myopia and astigmatism is psychic. To illustrate: A boy came to me with 4 or 5 diopters of mixed astigmatism under atropin. He never had been able to read more than a few minutes at a time and then only with much headache and pain. His mother (by a method of eye-training which I published) cured his defective sight for distance. Later, after some months without glasses, he became able to read Jaeger No. 1 without any asthenopia, without any apparent exophoria or esophoria and I believe that the cause of the heterophoria and the astigmatism in that boy was psychic.

DR. OTIS ORENDORFF, Canon City, Colo.: From a practical point of view we should consider diseases of the nasal cavity and associated sinuses. But little reference has been made to them. If you will make careful investigation of some of the most perplexing cases with associated phorias you will find numerous cases of nasal disease, and when they are cleared up the phorias will be also cleared up, and you will never be able to do it while the disease exists in the nasal cavities.

DR. MARK D. STEVENSON, Akron, Ohio: A point of interest found by the essayist is that right is more frequent than left hyperphoria. There are many possibilities entering into the explanation of this. It occurs to me that the most likely cause comes in line with what Dr. Jackson has just suggested. Just as good habits in children may assist in correcting deformities, so evil habits of looking may bring about undesirable changes. In a child at a desk sitting in a half-turned position, reading may produce hyperphoria. The difference in the distance between each eye and the reading matter is probably not very important; but the difference in the use and, therefore, in the development of the muscles is likely of great importance and has a real physical basis. For example, in looking much of the time down and to the left, the chief depressor of the right eye is the right superior oblique, and of the left, the left inferior rectus. Therefore, physically, the left inferior rectus will be more developed than the right and in looking at the distance where the muscle balance is usually tested, if desire for fusion is abolished, the more developed muscle will probably exert the greatest influence; and in this case turn the left eye lower which would explain the greater frequency of right hyperphoria. In testing such a patient's hyperphoria when looking to the left, left hyperphoria according to this theory would likely occur on account of the overaction of the hypertrophied right superior oblique. Left hyperphoria could also be explained on the same theory as the causation in those who habitually look downward and to the right. These habits will often vary with the individual and school. As fusion is abolished in the tests, this physical theory seems more plausible than differences in innervation.

DR. WILLIAM ZENTMAYER, Philadelphia: I feel the weakness of the paper. If I had it to do over again, I would ask advice from many confrères, as I did of some in Philadelphia, as to what I should look for and how to go about the analysis. I think one of the points Dr. Jackson made is very strong, that it would have been well to have studied the cases also from the point of age. In a discussion of this kind much that comes out is based on what I wanted to overcome by my paper. We all have ideas as to the ratio and relations of things, but when we come to analyze our cases we find our preconceived notions were wrong many times. I think some of the discussion proceeds along the line of the notions we have had. Replying to Dr. Valk I would say that last year we had a paper by a member of this Section in which it was declared that, in cases showing esophoria for distance and exophoria for near, the esophoria was a pseudoesophoria due to spasm from excessive effort at convergence to overcome the weak convergence. My cases do not bear out that view. With regard to presbyopia, as Dr. Jackson said, these cases, in time, right themselves, but I think it is better to follow Dr. Stevenson's suggestion and stimulate the convergence by putting on the weakest glass with which the patient can get along. The normal balance is also restored more quickly by prism exercises when the correction of the presbyopia has disturbed the relation between the convergence and the accommodation. As to Dr. Davis's exception to my conclusion that, on the whole, the heterophoria is not greatly influenced by the correction of the ametropia, I would say that perhaps we differ only as to our interpretation of the word "greatly."

Dr. Theobald has spoken of compound myopic astigmatism and the exophoria disappearing under its correction. Had I grouped the cases as to time—months and years—the results might have been different. I think that, probably, is the reason for the total average result being somewhat different from what might be expected from the correction of compound myopic astigmatism.

FUNCTIONAL HEART-BLOCK IN PNEUMONIA

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CASE 1.—N. R., man, aged 70, entered the German Hospital in a semicomatose condition. The only previous history with any bearing on his present complaint was that he had been ill for several months prior to admission; but neither the nature nor the symptoms of this illness could be determined. On examination he had marked paralysis agitans. The pulse-rate was 36 per minute and regular. The pupils reacted normally to light; the knee-reflexes were absent. There were signs of diffuse bronchitis with suspected areas of consolidation in both lungs; tubercle bacilli were not found in the sputum. The cardiac area appeared normal to percussion; the heart-sounds were indistinct; no murmurs were heard. Abdominal examination revealed nothing abnormal. The radial arteries felt somewhat thickened. There was no edema of the legs. Cheyne-Stokes breathing was absent. The patient was slightly dyspneic and cyanotic and gradually lapsed into complete coma. The pulse remained slow and regular throughout the illness, its rate varied between 34 and 36 per minute. The temperature ranged between 100 and 103 F.; on the day of death, one week after admission, it rose to 105.

Polygraphic tracings were obtained on different days; on one occasion, the radial pulse was 35 and the auricular rate 102 per minute (Fig. 2). There was no numerical ratio between auricular and ventricular contractions, the auricular waves (*a* waves) fell before, immediately after or with the carotid beats (*c* waves); in other words, complete auriculo-ventricular dissociation (complete heart-block) existed. The subcutaneous injection of 1/50 grain of atropin sulphate had no effect on the block (Fig. 3). For purposes of comparison, a normal tracing is shown (Fig. 1) with a normal pulse-rate and the rhythmic progression of *a-c-v* waves in the jugular pulse.

The following notes were abstracted from the post-mortem findings: The brain was slightly congested; its membranes

were normal. On gross section, the spinal cord appeared normal. There were several areas of pneumonic consolidation and evidences of general bronchitis. The gastro-intestinal canal, liver and pancreas were normal. The spleen was somewhat enlarged and congested. The renal capsules were slightly adherent; the organs themselves were congested and showed slight evidences of chronic interstitial changes. There was no lesion of the auriculoventricular bundle,* though it contained a little more connective tissue than is usually found. There was a slight amount of fatty infiltration of the auriculonodal junction, but its dimensions were sufficiently large to carry impulses. There were some moderately large areas of sclerosis in the interventricular septum, but these did not interfere with the continuity of the bundle.

CASE 2.—J. C., man, aged 49, entered the Lebanon Hospital with the typical history of acute pneumonic invasion: One week before admission he had had a severe chill; a day later fever, cough and rusty expectoration developed. On admission, the rectal temperature was 104; there was consolidation of the upper lobe of the left lung; the cardiac area could not be mapped out by percussion; the heart-sounds were distant and scarcely audible; the radial pulse was 120, regular and felt small; the blood-pressure (auscultatory method) was 100 mm. systolic and 60, diastolic. The patient was extremely collapsed and slightly stuporous. On one occasion the urine contained a heavy trace of albumin but no casts. For one week the temperature ranged between 101 and 104; the pulse remained regular. Its rate varied between 108 and 140 per minute, the systolic blood-pressure between 100 and 78 mm., the diastolic between 60 and 0 mm. The temperature then dropped by crisis to 97.5 by rectum. The pulse-rate fell to 88 and was regular. On the ninth day after admission, the ventricular rate suddenly fell to 44 per minute and for four days varied between that and 30. The patient remained in extreme collapse and semistupor with a rectal temperature below 98. The pneumonic area gradually underwent resolution, the radial pulse was very small, there were no visible jugular or carotid pulsations, and the heart-sounds were scarcely audible. There were no general convulsions, but there were frequent attacks of convulsive tremors of the musculature of the upper and lower extremities, which became very cold and cyanosed; the pulse then became very slow and scarcely perceptible and the semistupor changed to deep coma. Each attack lasted about one minute. Two days later the average pulse-rate was 48; the general condition remained the same.

Suddenly on the sixteenth day after admission and one week after the inception of the slow rhythm, there was a marked change in the patient's condition; he sat up in bed, was fully oriented, his color was good, the ventricular rate was 76 per minute and regular, and the heart-sounds though still faint, could be readily heard. There was a soft systolic murmur at the apex. Except on three different occasions, when the pulse-rate fell for a short time to 48, 44 and 40, the rate varied between 60 and 80 and remained regular. Polygraphic tracings were attempted during the period of slow rhythm but were unsatisfactory apparently because of the collapsed arterial and venous circulation. Two weeks later, electrocardiograms which I took showed sequential contractions uninfluenced by pressure on either vagus. The heart-sounds were then normal, the systolic blood-pressure 120 mm., the diastolic 70 mm. Prior to the inception of the slow pulse, 1 ounce each of digalen and the tincture of digitalis had been administered. There was no vomiting throughout the illness.

COMMENT

In Case 1 the history was too meager to approximate the duration of the heart-block prior to the patient's admission to the hospital. From the absence of any organic cause for heart-block in the pathologic examination it is reasonable to assume that pneumonia was the exciting cause of the block. In Case 2, the sudden drop of pulse-rate and its continued retardation for one week, the frequent slight muscular tremors, the general and circulatory collapse and the sudden resumption of normal pulse-rate leave no doubt as to the presence of heart-block. In the absence of graphic tracings, its nature — complete or incomplete — could not be determined. Since digitalis preparations in large amounts had been given previous to the onset of the block, its action as a possible cause for the latter requires consideration. It has been part of our routine in the treatment of pneumonia to give digitalis preparations by mouth or hypodermically in amounts similar to those administered in this case, but they never reduced the pulse-rate. It is well known that digitalis may produce heart-block. I have seen several cases of endocarditis with broken compensation in which digitalis produced block, but it was not accompanied by collapsed circulation; in fact, decompensation often improved; vomiting usually accompanied the digitalis poisoning. Mackenzie[1] reports a case of cardiac decompensation in which digitalis produced partial heart-block, extrasystoles and alternation; the drug was pushed until the patient vomited; he was very much improved despite these arhythmias. In my case there was no vomiting; the block came with the crisis; the patient was collapsed and there were slight convulsive tremors. These symptoms continued for one week after digitalis was stopped, and the sudden resumption of normal pulse-rapidity was accompanied by marked beneficial changes in the patient's sensorium and appearance. None of these symptoms resembles digitalis heart-block. It thus appears most probable that though the digitalis may have been a factor in the production of the block, its main cause was the pneumonia.

A sudden drop of pulse-rate to 60 or even 50 per minute with regular ventricular action is not infrequent in pneumonic crises, but such slow rhythms have not been sufficiently studied by graphic methods to determine whether they are true bradycardias (slow sequential auricular and ventricular beats) or are possibly due to heart-block. Hecht[2] reports a case of influenza in a child in which the electrocardiograms showed heart-block, which still persisted several months after convalescence. Magnus-Alsleben[3] reports a case of pneumonia in which digitalis had been given; the temperature fell by lysis; polygraphic tracings apparently show that every third or fourth ventricular beat is blocked. Bachmann[4] has tabulated all the cases of heart-block reported up to 1912; pneumonia is not mentioned as a causative factor. Mackenzie[5] states that the invading organism may assail the heart as well as the respiratory tract. Organic changes such as lymphocytic or leukocytic infiltration in or near the junctional tissues, marked myocarditis or cardiac infarct can be excluded, in Case 1 by the pathologic examination, in Case 2 by the sudden inception and relief from block and the other data given.

I have not been able to find any reports in the literature in which pneumonia was accompanied by heart-block with slow ventricular action and with no organic discoverable cause. There is ample evidence that heart-block may exist without any recognizable pathologic change in the cardiac structures; thus Lewis and

* I am indebted for the report of the examination of serial sections of the heart to Dr. A. E. Cohn of the Hospital of the Rockefeller Institute for Medical Research.

1. Mackenzie: Heart, 1910, ii, 359.
2. Hecht: Ergebn. d. inn. Med. u. Kinderheilk., 1913, xi, 393.
3. Magnus-Alsleben: Ztschr. f. klin. Med., 1909-1910, lxix, 85.
4. Bachmann: Jour. Exper. Med., 1912, xvi, 25.
5. Mackenzie: Diseases of the Heart, Ed. 2, p. 285.

Mathison[6] produced it by asphyxia, and Buchanan[7] showed that it is a physiologic phenomenon in hibernating animals. One may conceive several methods by which a chemical poison like the toxin of pneumonia circulating in the body may produce heart-block: thus, first, by a central effect on the cardio-inhibitory centers in the medulla; second, by profound disturbance of the nutrition or circulation of the general cardiac musculature or its auriculoventricular connections, or third, by an effect on the peripheral intracardiac ganglia and nerves. Our present knowledge of the last is so vague that its discussion would be fruitless. Regarding the first hypothesis, Einthoven[8] produced varying grades of complete and incomplete block in dogs by morphin injection and conceived it as due to the effect of the drug on the vagus centers in the medulla. In pneumonia the primary danger of circulatory failure is also probably due to central depression of the vasomotor system.[9] Cardiac failure in the ordinary sense was absent in my cases, there was very slight or no dyspnea, and edema was absent. Though it is impossible to exclude the effect of the toxins on the general and specific cardiac musculature (the second hypothesis) as a causative factor of the block, the symptoms and the dissociation were probably due to toxic depression

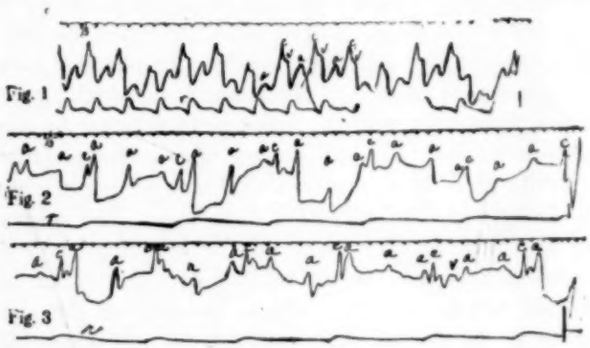

Fig. 1.—Normal polygraphic tracing. Rhythmic progression of *a-c-v* waves is seen in the venous tracing.

Fig. 2.—Complete heart-block. The auricular beats (*a* waves) have no sequential relationship to the carotid beats (*c* waves); they fall before, after or with the carotid beats.

Fig. 3.—Tracing taken after the injection of atropin sulphate, 1/50 grain. Complete heart-block is still present.

In the tracings *r* = radial beats, *a* = auricular waves, *c* = carotid waves. The time-marker indicates 1/5 seconds.

of the cerebral centers and not to any direct action on the heart.

The injection of atropin sulphate in Case 1 did not raise the block. It is usually assumed that the disappearance of arhythmias after atropin injection is an evidence of their functional nature. The contrary, however, is not true, for other factors, such as drug idiosyncrasies and the continued presence of counteracting poisons (toxins) may prevent or retard the disappearance of functional arhythmias following atropin injections.

SUMMARY AND CONCLUSIONS

Two cases of heart-block occurring in pneumonia have been described. In the patient who died, the pathologic examination showed no cause for block. Both cases were probably produced by pneumonic toxins which acted on the medullary centers. The injection of atropin sulphate in Case 1 had no effect on the block.

I am indebted to Dr. J. Kaufmann, attending physician, German Hospital, and to Dr. R. Stein, attending physician, Lebanon Hospital, for the privilege of reporting Cases 1 and 2, respectively; also to Dr. F. B. Humphreys, pathologist, German Hospital, for the post-mortem notes of Case 1.

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6. Lewis and Mathison: Heart, 1910, ii, 47.
7. Buchanan: Proc. Phys. Soc., 1911, xlii, 19.
8. Einthoven: Verhandl. Gesellsch. deutsch. Naturforsch. u. Aerzte, 1911.
9. Janeway, T. C.: The Comparative Value of Cardiac Remedies, Arch. Int. Med., March, 1914, p. 378.

THE TOXICITY OF CAMPHOR (CAMPHORATED OIL)

D. J. MILTON MILLER, M.D., ATLANTIC CITY, N. J.

In his "Therapeutics" (edition of 1906), H. C. Wood makes the following statement: "Although camphor has, in many cases, produced very alarming symptoms, over 200 grains of it have been taken without permanent result and the recorded fatal poisonings are very few. The only ones known to us are,—adult, quantity unknown; sickly infant, 10 grains; child, 2 years old, quantity unknown; fatal abortion produced by 3 drachms."

On the evening of June 3, M. C., a particularly robust infant of 18 months, weighing 31 pounds, was given, immediately after a full supper of milk and cereal, a brimming teaspoonful of camphorated oil (linimentum camphorae) by mistake. Two hours later I saw the child. It was sleeping quietly and naturally, with cheeks somewhat flushed and the scalp quite wet with perspiration, not an unusual phenomenon with it; the pulse was 110, the respiration 24. When awakened, the infant was found to be quite natural, playing and smiling in its usual manner, and, as nothing abnormal was discovered, nothing was done beyond the administration of 2 drams of castor oil. The child was then replaced in its crib, but was very restless, not falling into a sound sleep until near midnight, a condition which could be attributed as well to its having been disturbed as to the overdose of camphor. The infant awoke the next morning perfectly well, apparently quite unharmed by its unwonted medication.

As camphorated oil is a 20 per cent. solution of camphor in oil, the dose of camphor, given this infant of 18 months, must have been from 14 to 15 grains, the mother having given a brimming teaspoonful (from 1.25 to 1.33 drams); yet there were practically no symptoms.

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Rapid, Painless, Bloodless Method for Removing the Inferior Turbinate.—Nothing especially novel or original is claimed for this operation. It is reported only because of the ease and rapidity with which it is performed and the freedom from adhesions afterward. The primary requisite is an extra long Curtiss nasal trephine (1½ by ¼ inch), a pair of cutting forceps and an elevator for the mucous membrane. The nose is thoroughly anesthetized with crystals of cocain and a 1:1,000 solution of epinephrin. The mucous membrane having been lifted up with elevator over the lower turbinate and all adhesions having been removed, the bone is drilled through lengthwise with the trephine and all projecting edges are removed with cutting forceps. A Bernays compressed sponge which has been first wrapped with paraffin-paper and the ends left exposed is inserted into the nose. The paraffin-paper prevents the sponge from adhering to the wall of the nose, sufficient moisture having been absorbed through the uncovered ends to permit of swelling and at the same time prevents too much pressure on the inflamed surfaces. After three days this tampon is removed. It will be found to be free from blood and at no time either before or after the introduction of the tampon will there be enough blood to discolor a paper napkin. A simple oil spray is ordered and as primary union takes places and as the nasal fossae are widely patulous, no adhesions form.—W. PEYRE PORCHER, M.D., Charleston, S. C.

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SATURDAY, AUGUST 15, 1914

THE ACTUAL ACIDITY OF HUMAN GASTRIC JUICE

To anyone whose physiologic ideas are rooted in dogmatic or inherited statements it will seem bold to question one of the most wide-spread, sanctioned beliefs of clinical medicine. There is an assertion current in every treatise bearing on the stomach and its disorders that the human gastric juice normally contains about 0.2 per cent. of hydrochloric acid. That the gastric secretion of laboratory animals, the dog for instance, may show a decidedly greater acidity, commonly exceeding 0.5 per cent. of hydrochloric acid, is well appreciated. This discrepancy between the species has frequently received comment and been explained on teleologic grounds. Few persons have stopped to consider that in recent years the gastric juice procured for analysis from dogs has usually been obtained pure, directly through a fistula made for the purpose; whereas the figure accepted by both physiologists and clinicians for the secretion percentage in man was arrived at by examining the contents of the stomach, and not the uncontaminated juice. The bearing of this will appear presently.

There have been suspicions, from time to time, that the accepted figures for the "normal" gastric juice were involved in some uncertainty. The doubts have arisen as a rule among the gastro-enterologists who have occasion daily to decide as to the existence or absence in patients of hyperacidity or hyperchlorhydria. Most of the influential writers have stated that any amount of hydrochloric acid above 0.2 per cent. is to be considered a hyperacidity. On the other hand, cases are repeatedly encountered in which a greater acidity than this figure gives rise to no symptoms of hyperacidity. The situation is complicated by the fact that subjective elements enter into the judgment of the normality or abnormality of the features presented by the human patient. According to competent clinicians, symptoms of hyperacidity may exist even in cases of hypo-acidity. Consequently, those physicians who are willing to disregard the dictates of inflexible rules in diagnosis conclude that the same amount of acid may indicate a hyperacidity in one person and not in another, showing that individual variations may exist in the so-called normal percentage, and that a sharp line of demarcation cannot always be drawn between the normal and the hyperacid state. This has compelled critical clinicians to refer the symptoms of what is called hyperacidity to a hypersensitiveness of the gastric mucosa toward certain strengths of hydrochloric acid. Ulceration, erosion, atony and sensory neurosis may be factors which serve to correlate certain chemical findings with the sensory disturbances.

Pawlow of St. Petersburg, whose classic researches on the digestive glands won for him one of the early Nobel prizes in medicine, long ago came to the conclusion, on the basis of numerous researches on the pure gastric juice of dogs, that its acidity is essentially constant. The volumes produced may vary widely; not, however, the concentration of hydrochloric acid. There are fluctuations in the course of successive hours and in connection with different types of stimuli, which Pawlow explained as follows: The fluid secreted by the glands proper, which he terms "native" juice, always has a definite acidity. In pouring over the mucous membrane of the stomach this highly acid native juice undergoes a partial neutralization by the alkaline mucus. For this reason juice collected from a fistula may show a somewhat lower acidity during the early period of collection than later. The acidity of the juice actually removed for examination will accordingly depend on the relation of the secretion to the production of gastric mucus and also on the rate of flow. If gastric juice remains for any extended period within the stomach it likewise experiences considerable neutralization. Pawlow argued that in man the native acidity of the secretion of the gastric glands could not differ very much from the high figures (from 0.5 to 0.6 per cent. hydrochloric acid) noted for dogs and cats; and that it must always be constant, because man's food and the construction of his digestive organs are very similar to those of the animals mentioned. Clinicians, however, were not of this opinion.

In recent years, through conditions of accident or disease, a large number of gastric fistulas in human beings have made it easier to obtain pure gastric juice from man. The percentage of hydrochloric acid noted by various observers is sufficiently interesting and significant to be recorded here: Umber (1905), 0.35; Pfaundler (1900), 0.35; Hornberg (1904), 0.48; Goorevitch (1903), 0.37; Moritz (1901), 0.38; Seiler (1901), from 0.32 to 0.44; Verhaegen (1898), 0.48; Sommerfeld (1905), from 0.38 to 0.47; Carlson (1912), from 0.43 to 0.48.

Shall we explain these concordantly high figures obtained in widely separated parts of the world under unlike conditions as consistently due to hyperacidity?

Boldyreff of Kasan, Russia, an investigator favorably known for his contributions to the physiology of digestion, has offered an explanation to reconcile the seemingly contradictory facts in this field.[1] It has been difficult to explain why juice obtained from the entire normal stomach as distinguished from that obtained from experimentally isolated portions of that organ should almost always contain a lower concentration of acid, namely, from 0.1 to 0.2 per cent. of hydrochloric acid, the figures previously quoted. The key, in Boldyreff's judgment, is the observation made by many scientific workers, that the acidity of various acid fluids is reduced during their stay in the stomach. If the stomach always has, for some reason, a tendency to reduce to a definite average the acidity of foreign acid fluids brought into it, it is natural to suppose that either when empty or in those cases in which food material entering it is not capable of such reduction, the stomach similarly reduces the acid juice secreted by its own glands.

Opinion has been divided concerning the mechanism by which the acidity in the stomach is reduced; some attribute it all to the alkaline mucus secreted by the mucous cells of the interior surface of the stomach, others to the pyloric juice, and others to a special secretion supposed to serve the sole purpose of dilution. The saliva and mucus are doubtless minor agents in the partial neutralization of gastric acidity. Boldyreff considers the principal factor concerned to be the pancreatic juice, the strongest alkaline fluid in the body. It has long been known to neutralize the acidity of that portion of the intestinal contents which is next to the stomach; and we are now told that it fulfils the same function within the stomach.

The theses set up by Boldyreff may be summarized as follows:

The acidity of freshly secreted gastric juice is constant (0.5 per cent. hydrochloric acid). This is rapidly lowered to a level which oscillates between 0.15 and 0.2 per cent. The same thing happens after the introduction of any acids foreign to the stomach. This partial neutralization is due to the reflux into the stomach of alkaline juices from the duodenum, the pancreatic juice being here the most important factor. Neutral, alkaline, or feebly acid fluids provoke a secretion of the acid juice in order that the acidity may be brought to the normal level. The mechanism described for maintaining the optimum level of acidity — from 0.15 to 0.2 per cent. — is designated by Boldyreff as the "self-regulation of the acidity of the contents of the stomach." In cases of chronic absence of the pancreatic juice or an insufficient influx thereof into the stomach there is an accommodation whereby the scarcity is made up by an abundant influx of bile and intestinal secretion into the stomach.[2]

Though it is thus easy to reconcile the divergent results obtained, on the one hand, by clinicians working with gastric contents, and, on the other, by physiologists examining the pure secretion, it is nevertheless not necessary to deny the existence of such a pathologic condition as hyperacidity. All the factors involved should be considered, however, before making a diagnosis. The gastric juice may be perfectly normal and yet show a high acidity, because sufficient time has not elapsed to allow the regulatory partial neutralization to occur; there may be delay in the entrance of intestinal secretions into the stomach, or these may not possess the usual requisite alkalinity. We must seriously consider, therefore, whether the condition described by clinical observers as hyperacidity is not sometimes the expression of a lack of the most important neutralizing fluid, the pancreatic secretion, rather than a pathologic state of the gastric juice. The abnormality can actually be produced in animals by ligating the pancreatic ducts.

A high initial acidity of the gastric juice is advantageous for the destruction of bacteria which find their way into the upper digestive tract. The reduction to a lower degree of acidity has subsequent advantages, among which, obviously, is the prevention of injury to the small intestine. It is another story of wonderful regulatory mechanisms.

1. Boldyreff, W.: The Self-Regulation of the Acidity of the Gastric Contents and the Real Acidity of the Gastric Juice, Quart. Jour. Exper. Physiol., 1914, viii, 1.

2. Boldyreff, W.: Einige neuen Seiten der Tätigkeit der Pancreas, Ergebn. d. Physiol., 1911, xi, 121.

THE NUTRIENT VALUE OF INORGANIC SALTS OF LIME AND PHOSPHORIC ACID

The reluctance to admit the nutrient value of some of the inorganic compounds of elements like iron, calcium and phosphorus as compared with "organic" preparations is gradually being overcome. This preference for organic compounds is, we presume, a surviving expression of the old belief that there is an exceptional virtue in products which resemble in some degree the components of the living body. In its earliest phases this view was emphasized by the assumption that a diet of meat was particularly well adapted to the building of muscle; and similarly "organic" iron preparations were somehow looked on as preferable for "blood-building." To-day new experimental research is no longer required to justify the contention that "organic" and inorganic iron are alike available. This conclusion, so firmly fortified by elaborate investigation a decade or more ago, is quite in harmony with the modern studies on the chemical changes taking place in the alimentary tract. There is little doubt that whatever the combination in which they are ingested, iron and calcium and phosphoric acid are in good degree "ionized" by the digestive

processes; so that even the "organic" preparations in truth result in inorganic derivatives before they are ready for absorption.

Although the problem here set forth is in a sense settled for iron, the utilization of inorganic compounds of lime and phosphoric acid has not been so readily admitted in practice. Experiments on animals demonstrating the conversion of ingested inorganic phosphates into characteristic phosphorized tissue products, like the eggs of birds or the milk of mammals, for example, have not been lacking. But as usual it has been the demonstration of the fact on man that was needed to bring final conviction.

Accordingly, we may welcome the evidence now submitted from the Grossen Friedrichs-Waisenhaus of Berlin by Drs. Schloss and Frank[1] respecting the availability of tricalcic phosphate for the development of bone in growing infants. Elaborate balance experiments on children have shown convincingly the improved retention, not only of the elements represented in this inorganic compound, but also of other metabolic factors such as nitrogen and alkalies in addition, after this inorganic phosphate has been administered in the diet. The improved utilization following the use of tricalcic phosphate was not merely transitory; the advantage accruing therefrom was maintained. We may conclude, therefore, that even in the organism of the growing child so simple a compound as an inorganic salt of calcium can easily be absorbed and advantageously assimilated.

THE AIR OF RAILWAY TUNNELS

The discomfort of travel through smoke-filled railway tunnels is well known, but the question as to the possible effect of the gaseous impurities on the public health has not received the attention which it deserves. The result of such a study has just been published by the Hygienic Laboratory of the United States Public Health Service.[2] The relative amounts of sulphur dioxid and of carbon monoxid found under ordinary conditions in a typical non-electrified and a typical electrified tunnel (those of the Pennsylvania and the Baltimore and Ohio Railroads at Baltimore) were accurately determined. The results show that on an average there was about five times as much of the two gases in the tunnel through which coal-burning locomotives pass as in the one through which the trains are drawn by electric tractors. It was shown that the amounts of the gases in the non-electrified tunnel are subject to great variations, depending on traffic conditions. The probabilities are that a person will encounter noticeable amounts of sulphur dioxid in four cases out of five and disagreeable or very irritating amounts in two out of every five trips.

The amounts of sulphur dioxid found in the non-electrified tunnel varied from 0.6 to 15.1 parts per million, and the corresponding figures for the electrified tunnel were from 0.3 to 2.9 parts per million. In the case of carbon monoxid the amounts in the non-electrified tunnel varied from 4 to 267 parts per million, and for the electrified tunnel, from 3 to 25 parts per million. In order to ascertain what effects these quantities might have on passengers passing through the tunnels, Seidell and Meserve[2] reviewed the literature of studies which have so far been made of the action of these gases on animal organisms. It was found that results on minute amounts of the gases are quite meager and the statements concerning their action are in very general terms, so that no really satisfactory idea of the maximum amounts which can be tolerated without injury can be obtained. The question is naturally one which does not lend itself readily to solution. Individual variations and idiosyncrasies will play an important part in any studies which can be made, and interpretation of the results will vary with the point of view of the interested person.

The principal value of the data contained in the bulletin of Seidell and Meserve is to show the actual amounts of the gases present and the reduction in the amounts which can be accomplished through electrification. The question as to whether or not the quantities present are dangerous to health, can be answered only on the basis of extensive physiologic experiments made with similar quantities of the gases. In regard to the discomforts of travel through smoke-filled tunnels there is no question. It does not appear possible at present, however, to affirm that the gaseous impurities in non-electrified railway tunnels are a menace to the public health and therefore justify a demand that the conditions be ameliorated. It seems likely that persons suffering from respiratory or circulatory disturbances may have the condition aggravated by passage through tunnels containing coal-gases, especially sulphur dioxid.

CONGESTIVE AND OTHER CONDITIONS OF MENSTRUATION

The menstrual period has long been regarded as inevitably bringing pain or discomfort and more or less disability to a large number of women at frequent intervals. Experimental investigation relative to menstruation has been largely impossible, so that at best the conclusions on this subject have been based on statistics of various sorts gathered from diverse sources. Comparable functions in the lower animals afford few facts bearing directly on menstrual phenomena noted in the human species. To the minds of those who give attention to the physical degeneration and suffering of an increasing number of women, the question invariably suggests itself, however, whether

1. Schloss, E., and Frank, L.: Tricalciumphosphat als Knochenbildner beim menschlichen Säugling, Biochem. Ztschr., 1914, lx, 372.
2. Seidell, Atherton, and Meserve, Philip W.: Gaseous Impurities in the Air of Railway Tunnels, Hyg. Lab. Bull. 92, U. S. P. H. S.

modern conditions of living or dress—factors of personal hygiene—are not responsible for a considerable share of the real or imagined difficulties that have been encountered. Like many other physiologic problems, that of menstruation and its attendant symptoms is so bound up with traditions, inherited prejudices and uncritical personal judgments that the open-minded reviewer is often checked in his attempts to untangle fact from fancy.

Quite recently two contributions[1] have been recorded which should help to eradicate the belief in the inevitable "illness" as the dominating characteristic of menstruation. Dr. Mosher believes that many of the untoward features of functional dysmenorrhea are due to remediable conditions. The periodic physiologic congestion which occurs about the time of menstruation is frequently so excessive that it produces congestive dysmenorrhea. The upright position, lax abdominal muscles, costal instead of diaphragmatic breathing and constriction of the body by clothing which interferes with the use of the diaphragm and abdominal muscles—all combine to develop and promote the excessive pelvic congestion. As a result of such conditions, rather than of any inherent natural organic changes, there may be pain at the menstrual period, prolonged hemorrhage and undue loss of blood. These consequences, Dr. Mosher believes, may be averted by suitable physical therapy.

Despite the widely accepted belief that menstrual disability among women is inevitable, Dr. Mosher insists that under normal conditions there should be no more suffering with disorders of the generative organs than with disturbances of the digestion. She concludes that at present all the evidence points to the menstrual hemorrhage as a secondary matter more or less fixed by the upright position. It is unnecessary and undesirable that it should be of more than brief duration or of more than slight amount. Pain and discomfort, where no organic lesion exists, are readily controllable by the physiologic regulation of the circulation from the abdomen and pelvis back to the heart, by the restoration of the tone and action of the diaphragmatic and abdominal muscles. This is accomplished by suitable bodily exercises. Other coincident functional disturbances, such as congestive headaches, are simultaneously relieved by the "equalizing" of the circulation.

Dr. King has searched with little success for the evidences of rhythm in the organic activities which has so long been emphasized by writers on the subject. Granted that a lowering in pulse-rate, temperature and blood-pressure occur during the menstrual and post-menstrual periods, she asks if much significance should, after all, be attached to a diminution in pulse-rate of from two to three beats, to temperature variations rarely greater than 1 degree, and to blood-pressure changes averaging from 2 to 5 mm. Certainly, Dr. King adds, one would suppose that in a healthy individual a normal periodic function should not be accompanied by marked depression of all the life-processes and the generally lowered efficiency so emphasized by numerous writers. If there is a compensation for the loss of blood, it would seem that there should be a compensation in the cardiovascular system. Perhaps this is indicated in the tendency of the blood-pressure to show such slight variations. It has been remarked with regard to menstruation that we have too long confused cause and effect: the menstrual hemorrhage is not the cause of the alleged blood-pressure rhythm, but an exaggerated result of interference with normal circulation. It is generally believed that primitive and savage women have a very scanty menstrual flow. If we may trust the recent contributions on the subject, it would appear that there has been a tendency to overemphasize the inefficiency of women during the menstrual period.

1. Mosher, Clelia D.: A Physiologic Treatment of Congestive Dysmenorrhea and Kindred Disorders Associated with the Menstrual Function, THE JOURNAL A. M. A., April 25, 1914, p. 1297. King, Jessie L.: Concerning the Periodic Cardiovascular and Temperature Variations in Women, Am. Jour. Physiol., 1914, xxxiv, 203.

PHYSIOLOGIC SALINE SOLUTIONS

There are numerous occasions in the routine of clinical practice which may call for the use of saline solutions that shall conserve as perfectly as possible the functional or physiologic integrity of the organs and tissue with which they come into contact. The intravenous or subcutaneous infusion of saline may be cited as an instance of this character. Science has learned long since not only that pure water is actually damaging, not to say indifferent, toward living cells, but also that the older so-called physiologic saline, that is, 0.9 per cent. sodium chlorid solution, is not an ideal fluid for contact with tissues. The salts of various elements or ions, such as sodium, potassium, calcium and magnesium, though used in solutions of suitable osmotic pressure, may still individually be decidedly harmful, the toxicity or detrimental character varying with the individual elements involved. On the other hand, the presence of a little of some ion, like calcium, may overcome the harmfulness of another, like sodium.

To Jacques Loeb, who has devoted much energy and so many years of study to the problems here concerned, we owe the conception of a "physiologically balanced" solution. By this is meant one containing salts of such character and in such proportions that any toxicity which the individual components might exhibit by themselves, if they alone were present in solution, is completely compensated and made to disappear. Loeb has emphasized the antagonism of sodium toward potassium and calcium. The underlying facts here involved were incorporated years ago

by Ringer in the experiments which gave rise to the perfusion fluid bearing his name. Ringer's solution, as is well known, contains a mixture of the chlorids of sodium, potassium and calcium in the proportions of about 0.9, 0.042 and 0.024 per cent., respectively. The details of its composition have been varied by subsequent experimenters in minor respects, by alterations in the relative content of these original components or by further additions, such as alkali carbonate or phosphate. One of the most recent representatives, Tyrode's solution, in which active tissues retain their vitality very well, has the following combination of inorganic ingredients: sodium chlorid, 0.8 per cent.; potassium chlorid, 0.02; calcium chlorid, 0.02; magnesium chlorid, 0.01; sodium phosphate, 0.005; sodium bicarbonate, 0.1.

The test objects which have been employed to ascertain the suitability of the large number of types of "physiologic solutions" have been almost as numerous as the investigators who have dealt with them. Isolated tissue-cells, egg-cells, individual organs like the heart, etc., have served in this capacity. Probably no more sensitive mechanism is to be found than the central nervous system, which speedily loses its irritability and characteristic ability to respond when the fluid medium in which it is bathed fails to suit its needs. For this reason special interest attaches to all investigations conducted with perfusion fluids on the nervous tissues. An unexpected outcome of a very recent study in this field has been the apparent demonstration that the salts of sodium and calcium by themselves provide adequate conditions for the survival of the central nervous system of mammals.[1] According to Gerlach, who developed these facts in Winterstein's physiologic laboratory at Rostock, even minute additions of potassium are objectionable. Calcium and sodium cannot be replaced by other ions. Lithium, for example, was tested in place of the alkali sodium; and the calcium could not be substituted by the related alkali earths barium, strontium or magnesium. Incidentally, the use of calcium-containing solutions in perfusion trials has been observed to prevent or diminish entirely the objectionable formation of tissue edemas, in accord with the contentions of certain physiologists.[2]

The solution which Gerlach has found most satisfactory for the perfusion of the isolated central nervous system contains 0.9 per cent. sodium chlorid and about 0.05 per cent. dry calcium chlorid. Whether it will prove as suitable for use in human practice as are the "physiologic salines" made up according to current directions, remains to be determined in future experiments. In point of simplicity the new solution commends itself as worthy of investigation. It may well be that the individual organs—brain, heart, muscles, etc.—differ somewhat in the answer they give to the question of a suitable perfusion fluid. What the clinician primarily seeks is an ideal fluid for infusion into the circulation of the entire body.

1. Gerlach, P.: Der Einfluss verschiedener Ionen auf das Ueberleben des Zentralnervensystems von Säugetieren, Biochem. Ztschr., 1914, lxi, 125.
2. Chiari and Januschke: Hemmung von Transsudat- und Exsudatbildung durch Calciumsalze, Wien. klin. Wchnschr., 1910, p. 427.

MAGNESIUM SALTS, ETHER AND CHLOROFORM

Although the narcotic phenomena produced by the injection of magnesium salts—a procedure introduced by Meltzer and Auer—are now quite familiar, the theories with respect to their behavior have not been in entire accord. It has been noted in animals without exception that a certain dose of magnesium sulphate or magnesium chlorid will produce a deep, often long-lasting anesthesia with complete relaxation of all the voluntary muscles and abolition of some of the more important reflexes. Recovery from such anesthesia is perfect. A larger dose of magnesium salt will produce profound anesthesia and a general paralysis, which, without any preceding or accompanying symptoms of excitation, lead sooner or later to death. The salt invariably effects reduction of excitation or its complete temporary or permanent abolition.

The question has been raised whether or not the symptoms observed represent a true narcosis of central origin or merely a profound paralysis involving the peripheral nervous system. It seems obvious from the fundamental experiments of Meltzer and Auer that complete anesthesia and inhibition of the higher motor centers can be induced by suitable dosage before untoward effects on respiration are evinced. As an indication that the predominant influence is exerted on the central nervous system, Meltzer and Auer showed that, when combined, each in a dose insufficient by itself to produce anesthesia, magnesium salts and ether could initiate that condition without any evidence of peripheral paralysis.[1] The magnesium salt thus appears to supplement the action of a substance which is believed to act on the higher nervous centers. The method involved has been employed successfully in human surgery.[2]

The problem has been attacked in other ways, one of which is by the use of antagonistic drugs the mode of action of which is precisely known. Camphor, for example, can overcome the effects of agents like paraldehyd or chloral hydrate, which depress the central nervous system; physostigmin antagonizes comparable effects on the peripheral mechanisms. The study of the specific influence of a variety of types of antagonists to narcotic and inhibitory substances might be expected to reveal, by the relative success of each group in

1. The Narcotic Action of Magnesium Salts, editorial, THE JOURNAL A. M. A., Oct. 25, 1913, p. 1544.
2. Meltzer, S. J.: Magnesium und Aether bei Operationen am Menschen, Zentralbl. f. Physiol., 1913, xxvii, 634.

removing the symptoms, the real seat of the action of magnesium salts. This mode of investigation has again been taken up by Starkenstein in the pharmacologic institute of the German University in Prague.[3] His conclusion is that it is not possible to designate the so-called magnesium narcosis as either a purely central or purely peripheral paralysis, but that the irritability of all parts of the nervous system is depressed by magnesium ions. Substances which have been supposed to act only peripherally may exhibit a central effect and vice versa. This is quite in harmony with the latest observations of Auer and Meltzer on the effects of ether on the skeletal motor mechanism.[4] Contrary to the usual statement that ether and chloroform, when inhaled, do not affect the muscles and nerves, these authors find that inhalation of ether exerts an unmistakable influence on the irritability of these tissues. In many experiments involving the direct stimulation of individual groups of muscles and nerves, the depressive effect of the anesthetic was manifest to such a degree that no tetanus at all was obtainable; even the single contraction of the muscles was often nothing more than a short twitch. This depressive manifestation is readily reversible and prompt if the etherization is not too prolonged or dangerously deep. There are distinct differences in the nature of depressive effects between stimulation of nerve or of muscle.

Auer and Meltzer point out that the decreased capacity to produce a tetanus means an increase of fatigability. The greater loss of tetanus with nerve stimulation than with direct stimulation of the muscle under the influence of ether anesthesia means, therefore, that the inhalation of ether causes a greater fatigability in nerve than in muscle. Increased fatigability of the nerve to stimulation means increased resistance to the passage of impulses or increased fatigability of the nerve-endings, since nerve-fibers are not fatigable as a rule. A greater resistance to the passage of impulses in the nerve-ending than in the muscle-tissue is a curare-like action. Magnesium salts have been said to act essentially like curare. Evidently ether, besides its undoubted central effects, has a similar activity.

Some further bearings of these facts have been brought out by these observations that the peripheral motor mechanism may be profoundly affected by ether inhalation. Githens and Meltzer[5] have obtained evidence that the phrenic nerve and the diaphragm lose a good deal of their irritability in the course of ether anesthesia and that the toxic action on the peripheral respiratory mechanism begins at an early stage of the etherization. Surprising as it may seem, chloroform, on the other hand, practically does not affect the irritability of motor nerves.[6] In experiments lasting sometimes six or seven hours the response to a faradic stimulation of the nerve at the end of the period was a tetanus equal to that obtained at the beginning with a similar stimulus. Only when by the prolonged use of a full dose of chloroform the heart became profoundly affected did the irritability of the nerves also become depressed; but this depression is apparently only secondary, due to anemia and asphyxia, and is not a primary effect of chloroform.

3. Starkenstein, E.: Untersuchungen über die Magnesiumnarkose, Zentralbl. f. Physiol., 1914, xxviii, 63.

4. Auer, J., and Meltzer, S. J.: The Effect of Ether Inhalation upon the Skeletal Motor Mechanism, Proc. Am. Soc. Pharmacol. and Exper. Therap., Jour. Exper. Pharmacol., 1914, v, 521.

5. Githens, T. S., and Meltzer, S. J.: The Nature of the Cessation of Respiration in Deep Ether Anesthesia, Proc. Am. Soc. Pharmacol. and Exper. Therap., Jour. Exper. Pharmacol., 1914, v, 523.

6. Githens, T. S., and Meltzer, S. J.: The Irritability of Motor Nerves in Chloroform Anesthesia, Proc. Am. Soc. Pharmacol. and Exper. Therap., Jour. Exper. Pharmacol., 1914, v, 523.

Current Comment

THE URINE IN CARCINOMA

The enormous activity which has been aroused in recent years in the study of cancer, stimulated by the contribution of almost unlimited funds, the erection of special institutes and hospitals, and the promise of personal distinction for those who win success, has unfortunately developed some undesirable aspects. No one can deny that there is a formidable and promising array of talent engaged in the solution of the cancer problems. On the other hand it cannot be concealed that there has been an unduly large output of undigested hypotheses. In many fields of science a theory does little harm and often much good, however short-lived it may be, for it either stimulates the investigators to a rigid examination of its contentions or enables them to use it in the critique of their work. But where hypotheses are likely, as in medicine, to find a speedy translation into the terms of practice, a certain degree of intelligent conservatism is usually preferable to the awakening of false hopes based on unjustified premises. To-day we can record another controverted claim emanating from the clinical study of cancer. The urine of man contains a group of chemical substances of unknown origin and indefinite composition, commonly spoken of as the oxyproteic acids. They represent a small fraction of the nitrogenous content of the urine precipitable by special methods of chemical treatment. A few years ago it was announced in contributions from the First Medical Clinic of the University of Vienna that the oxyproteic acid fraction of the urinary nitrogen is decidedly increased in carcinoma, the augmentation being emphasized as a characteristic of the disease. A revision of the subject in von Fürth's laboratory in Vienna has failed to substantiate this.[1] There are cases in which the usual, or normal, content of 4 per cent. is raised to as high as 9 per cent. This occurs only in the cachectic stages of carcinoma and is found in the severe stages of other diseases such as tuberculosis.

1. Sassa, R.: Ueber die quantitative Bestimmung der Oxyprotsäurefraktion im normalen und pathologischen Harne, Biochem. Ztschr., 1914, lxiv, 195.

It is not a constant phenomenon, but merely an occasional accompaniment of severe cachexia, whatever its antecedent cause may be.

THE WAR AND THE DRUG-SUPPLY

While American life has not been at once affected in any wide-spread dramatic way by the European catastrophe, all sorts and conditions of men are likely to find it touching them at unexpected points. Physicians, for instance, may find that they are hampered in the writing of prescriptions by scarcity of some drug. This country doubtless would suffer little inconvenience beyond the increase in price if compelled to rely on the resources of this continent so far as most inorganic chemicals and biologic preparations are concerned. As for vegetable drugs, however, aside from cascara, hydrastis and podophyllum, few of therapeutic importance are produced in the United States. This country depends largely on European manufacturers for finished preparations and on European middlemen for crude drugs. Crude drugs from the far East, such as buchu, cinchona, senna, asafetida, rhubarb, opium and aloes, come to us largely through the London and Amsterdam markets. A comparatively small amount of cinchona comes from South America, and, if access to the London and Amsterdam markets is shut off, the South American drug might be obtained direct. While the prices for these substances have advanced, the supply should not be altogether cut off by this war unless it should spread to the East and thus limit production. This year's opium crop in southeastern Europe is said to have been greatly damaged by the recent war in the Balkan States and Turkey. Of imported synthetic drugs and alkaloids, by far the largest proportion come from Germany. Ophthalmologists are likely to feel the result of the interruption of trade with Germany in the withdrawal of supplies of physostigmin, pilocarpin, atropin and homatropin. Other important drugs of German manufacture are strychnin, quinin, caffein, cocain, theobromin, formaldehyd and salvarsan. The involvement of France, the chief source of supply of tartaric acid, and of Austria-Hungary, which with France and the Balkan States supplies us with the essential oils, will affect the drug-supply much less than the isolation of Germany.

PRODUCTION OF MEDICINAL SUBSTANCES IN THE UNITED STATES

We have commented above on the effect of the European war on the drug-supply. We may reckon some gain along with the loss if the war leads to a scrutiny with a view to revision of the United States patent laws, which at present favor the importer at the expense of the American public. The patent laws of Great Britain and some other countries provide that the holder of a patent must, under penalty of forfeiture, begin manufacture of the patented product within the country in a reasonable period of time from the issuance of the patent. An American branch of at least one German house had begun the manufacture of a synthetic product before the war. Others may find it worth while to manufacture on American soil if the war continues; but if our patent laws had contained a provision similar to that of the British law, we would not now be threatened with temporary shortage or stoppage of therapeutic supplies. Our laws, in addition, permit the patenting, not merely of the process, but also of the product. Therefore the American market is altogether dependent for any given patented product on a single foreign manufacturer. Revision of our patent laws may become a necessity if the European war is not over soon. Another result may be an investigation of the possibility of producing in this country a larger proportion of the drugs used here. The Department of Agriculture has long maintained that, so far as soil and climate are concerned, the conditions are favorable for the growing in this country of many of the drug-plants now imported from abroad. In view of the uncertainty whether or not, under practical conditions, the yield could be marketed profitably, cultivators have naturally been somewhat reluctant to experiment with untried crops; but the stimulus of war prices doubtless will induce some growers to make a trial that will demonstrate which drug-plants are commercially profitable.

THE FATE OF CHOLESTEROL IN THE BODY

Now that cholesterol is no longer viewed with indifference with respect to its physiologic rôle, and its possible functions in a variety of phenomena involving the "lipoids" are conceded,[1] the fate of this interesting compound found so widely distributed in animal tissues is brought up for consideration more prominently than ever before. The exceptional resistance of cholesterol to ordinary reagents, its stability, coupled with the lack of knowledge respecting its precise chemical structure, has served to retard the understanding of what happens when cholesterol disappears in the organism. A "balance" of the cholesterol intake, output and storage has never yet been correctly struck in suitable experiments. It appears quite probable that little, if any, cholesterol is ordinarily synthesized anew.[2] In the light of this situation even tentative hypotheses are acceptable. From this point of view we refer to the recently developed views of Lifschütz[3] in Hamburg. He believes that among the diverse physiologic uses of cholesterol is the function of its disintegration products in the migration of fats in the body. According to him the compound takes up an atom of oxygen—presumably in the blood-stream—and is converted into oxycholesterol, a substance far more reactive than its natural precursor. But beyond this there are other decomposition products which Lifschütz regards as the mother substance for the non-nitrogenous components of the bile acids. Such a sequence of interrelationships has been postulated before, and the burden of proof still remains with those who propose it.

1. Reflections Regarding Cholesterol, editorial, The Journal A. M. A., Feb. 21, 1914, p. 620.
2. The Conservation of Cholesterol in the Organism, editorial, The Journal A. M. A., March 30, 1912, p. 941.
3. Lifschütz, J.: Der Abbau des Cholesterins in den tierischen Organen (Studie). VI. Mitteilung. (Cholesterin-Gallensäuren), Ztschr. f. physiol. Chem., 1914, xci, 309.

Medical News

ILLINOIS

Medical Staff Organized.—The medical staff of the Galesburg Hospital at its meeting for organization, August 3, elected Dr. Clarence B. Ripley as chief and Dr. Arthur D. Pollock as secretary of the staff.

Work on Epileptic Colony.—The State Board of Administration has ordered a topographic survey of part of the ground selected for the buildings for the new State Epileptic Colony. This work will take probably two or three weeks.

State Hospital Changes.—Dr. Romney M. Ritchey of the Anna State Hospital has been transferred to the Elgin State Hospital.——Dr. George W. Morrow, acting assistant superintendent at the Anna State Hospital, has been succeeded by Dr. Whedon W. Mercer of the Peoria State Hospital, and has resumed his position as ward physician.

Personal.—Dr. Charles B. Horrell, Galesburg, is reported to be detained in Europe by reason of the war conditions. ——Dr. Elmer E. Hagler, Springfield, who was recently operated on for appendicitis, has recovered and resumed his practice.——Dr. Albert Weil, Peoria, is reported to be seriously ill with septicemia at Proctor Hospital, Peoria.——Dr. Catherine B. Slater, Aurora, has gone abroad.——Dr. E. W. Fell of the staff of the Elgin State Hospital has resigned to become a member of the staff of the Ransom Sanitarium, Rockford.——Dr. Frederick W. Werner, Joliet, who has been seriously ill with septicemia at Silver Cross Hospital, suffered amputation of his right foot August 11.

Chicago

Personal.—Drs. E. Wyllys Andrews, John B. Murphy, Howard O. Shafer, Harry M. Richter, J. Rawson Pennington and Paul Oliver returned from Europe last week.——Dr. James W. Jobling, formerly pathologist of the Michael Reese Hospital, has been appointed professor of pathology in the Vanderbilt University, Nashville, Tenn.——Dr. George W. Dunlap has sailed for Europe.

Physicians Held in Europe.—Among the Chicago practitioners who are held in Europe by reason of the difficulty in obtaining transportation on account of the war are the following: Donald P. Abbott, Russell M. Wilder, Maurice Pincoffs, Vernon C. David, Charles Davison, Nelson M. Percy, William Fuller, Otto H. Rohrlack, Adolph Hartung, George W. Post, Jr., Winfield Scott Hall, Adolphus E. Bertling, Maximilian Herzog, Kasimir A. Zurawski, George Paull Marquis, Thomas J. Watkins, Norval H. Pierce, Cassius D. Wescott, Junius C. Hoag, Casey A. Wood, Isaac A. Abt, Ira Frank, Samuel Salinger, Adolf Decker, Walter H. Allport, John A. Stahl, Calvin W. Harrison, Frank A. Stahl, Charles H. Solomon, Robert S. Denney, Harry R. Wormley, Emilius C. Dudley, Franklin H. Martin, David Monash, Ernest Saurenhaus, F. Curt Harnisch, Leo M. Czaja, Truman W. Brophy, R. D. MacArthur, Charles M. Robertson, Allan B. Kanavel, Willis O. Nance, Henry R. Smith and Carl Langer.

IOWA

Sanatorium Opened.—The Scott County Tuberculosis Hospital was opened recently with simple ceremonies. The institution represents an investment of $75,000.

Personal.—Dr. Campbell P. Howard, Iowa City, has been elected vice-president of the American Society for Clinical Research.——Dr. John E. Brinkman, Waterloo, has gone abroad.

Health Officers Given More Power.—The State Board of Health on July 9 adopted a rule regarding quarantine for contagious diseases which gives health officers absolute power in the conducting and handling of these cases.

Work of State Bacteriologist.—During the biennium ending July 1, 1914, the State Board of Health Bacteriologic Laboratory has made 35,433 examinations. About 17,000 of these were for diphtheria, 7,000 for tuberculosis and 4,000 for typhoid fever.

New Officers.—Iowa University Medical Society at Cedar Rapids, July 14: president, Dr. Henry J. Prentiss, Iowa City. ——Harrison County Medical Association at Logan: president, Dr. John Tamisiea, Missouri Valley; secretary, Dr. Hans Hansen, Logan.

Workingmen's Compensation Act.—Dr. Wilbur S. Conkling, Des Moines, representing the Polk County Medical Society, recently conferred with Warren Garst of the Industrial Commission with regard to the cooperation of the state in making the Workingmen's Compensation Act a success.

Hospital Notes.—The Isolation Hospital at Clinton was opened for patients last week. Four beds are provided for patients suffering from quarantinable diseases, and more accommodations will be provided when the upper floor of the building is completed.——Johnson County Medical Society has appointed a committee to secure signatures for the petition for a new hospital for Johnson County. It is proposed to erect a building to cost between $40,000 and $50,000.

MARYLAND

Hospital in Hands of Receiver.—Arlington Rest, a sanatorium and private hospital at Arlington, Md., which has been conducted by Dr. Chauncey T. Scudder, has been placed in the hands of a receiver. Dr. Scudder is said to have left the city four weeks ago, thus leaving the institution without an executive head or the advice of a medical expert.

Personal.—Dr. Randolph Winslow and Dr. Walter F. Sowers, Baltimore, have sailed for Europe.——Dr. William C. Stone, Ellicott City, health officer of Howard County, has resigned on his appointment as deputy health warden.—— Dr. W. L. Moss, assistant resident physician at Johns Hopkins Hospital, and in charge of the tuberculosis laboratory, has been appointed internist of the Buffalo State Institute for the Investigation of Malignant Diseases, Buffalo, N. Y. ——Dr. Thomas F. Keating, Baltimore, has been appointed assistant surgeon in the United States Public Health Service. ——Dr. Felix Landois, Johns Hopkins Hospital, captain in the German army medical corps, has been recalled to Germany.

Baltimore

The Fresh-Air Fund.—The Baltimore *News* Fresh-Air Fund had passed $7,000 on July 31 and should reach the $10,000 desired before the end of the season. This fund is for the benevolent activities of the fresh-air farm at Fallston.

State to Help Support Laboratory.—The state of Maryland has agreed to help support the bacteriologic laboratory of the Baltimore Health Department and also to pay the city $500 rental for accommodation in the new quarters of the Health Department.

President Remsen on Round-the-World Trip.—Dr. Ira Remsen left Baltimore July 16 on a tour around the world by way of the west. He will attend the meeting of the British Association for the Advancement of Science in August and various scientific meetings to be held in New Zealand early in September.

MISSOURI

New Members of Health Board.—The Governor has appointed Dr. Marc Ray Hughes, St. Louis, a member of the State Board of Health to succeed Dr. Ira W. Upshaw, St. Louis, term expired. Dr. T. A. Son, Bonne Terre, to succeed Dr. G. D. Schulz, Cape Girardeau, term expired, and Dr. T. H. Wilcoxen, Bowling Green, to succeed himself.

Home for the Aged.—An anonymous benefactor has donated a home for the aged in Kansas City, and the old Fowler home at Independence and Mt. Gault Avenues has been selected as a site. The house has been remodeled and will contain seventeen rooms in addition to the servants quarters. Four buildings are also to be erected, each of which will contain four modern apartments for aged couples. The institution is to be known as the Kansas City Home for the Aged, and Dr. E. L. Mathias is secretary.

Personal.—Dr. E. S. Carnell, Kansas City, has arrived in London from Vienna, and is awaiting transportation to this country.——Dr. J. C. Humphries, Laredo, is reported to be seriously ill with kidney disease at the hospital in Trenton. ——Dr. David Gordon, Chillicothe, was dangerously injured by the overturning of his buggy July 31, in a washout when returning from a personal call.——Janet Reid has been appointed medical director of the Deming Tent Cottage, Deming, N. Mex.——Dr. J. M. Singleton, Kansas City, is reported to be critically ill with heart disease at his farm near Leeds.

NEW JERSEY

Personal.—Dr. Richard H. Dieffenbach has resigned as a member of the Board of Health of Newark.——Dr. George B. Verbeck has resigned as resident physician at the Mountainside Hospital, Montclair.——Dr. Margaret N. Sullivan,

Jersey City, has been placed in charge of the women's ward at the Jersey City Hospital.

State Society Meeting.—At the one hundred and forty-eighth annual meeting of the Medical Society of New Jersey held at Spring Lake, the following officers were elected: president, Frank D. Gray, Jersey City; vice-presidents, Dr. William J. Chandler, South Orange; Dr. Philip Marvel, Atlantic City, and Dr. William G. Schauffler, Lakewood; recording secretary, Dr. Thomas N. Gray, East Orange (reelected); corresponding secretary, Dr. Harry A. Stout, Winona (reelected), and treasurer, Dr. Archibald Mercer, Newark (reelected). The 1915 meeting will be held in Spring Lake.

Hospital Notes.—The contract for the new medical building for the Mountainside Hospital, Montclair, was awarded July 23. The building will cost about $100,000.——The former home of Theophilus Zerbrugg, Riverside, who left a half million dollars to found a memorial hospital, has been purchased and remodeled and is to be used as a foundation of the new institution.——Dr. Edward Guion, health officer of Atlantic City, has proposed to Atlantic City the establishment of a tented village for tuberculosis patients on the county farm at Smith's Landing.——The freeholders of Camden County and the county tuberculosis commission inspected the new county tubercular hospital at Ancora. The property includes 81 acres of land on which a sanatorium formerly stood. The building has been remodeled at a cost of $50,000, and now has accommodations for 100 patients.

NEW YORK

New Officers.—New York Medical Alumni Association of the University of Maryland, fifth annual reunion at Syracuse, July 30: president, Dr. Emory W. Carr, Lyons; secretary-treasurer, Dr. DeLancey F. Bartlett, Fayetteville.

Hospital Surgeons Meet.—The newly organized Hospital Surgeons' Association of Kings County met in Brooklyn, July 21, adopted a constitution and by-laws, and appointed an executive committee consisting of a representative from each hospital to serve for the ensuing year.

Physicians and Casualty Companies Agree.—After a series of conferences between representatives of casualty companies and of the Medical Society of the State of New York, a fixed schedule of charges for service to injured employees under the new compensation law has been agreed on.

Petition for Hospital.—A petition, containing the names of eighty physicians of Steuben County, has been filed with the clerk of the county board of supervisors, asking an appropriation for the purchase of a site for a county tuberculosis sanatorium and for the erection of buildings for the institution.

Austria to Get Serum Here.—Dr. Sigismund S. Goldwater, health commissioner, has received a cablegram from the Serum Institute of Vienna requesting the immediate delivery of 50 liters of tetanus serum for the use of wounded Austrian and Hungarian soldiers. The laboratories of Otisville will furnish the serum.

Aid in Cancer Diagnosis.—The State Institute for the Study of Malignant Disease at Buffalo, N. Y., is prepared to cooperate with physicians throughout the state to undertake to make the diagnosis of all cancer cases throughout the state and states that it will be glad to diagnose all cases from the city of New York sent to the institute. They are desirous that the physicians of the state and of New York City should be made aware of this opportunity.

New Nursing Periodical.—The *Nurse*, announced as "a magazine of scientific nursing instruction and nursing literature," is to be issued monthly by the Nurse Publishing Company, Jamestown, N. Y. The terms are $2 a year in the United States and dependencies, Mexico and Canada, and $3 in other countries in the postal union. The first issue (July) consists of 82 pages containing, among other articles, papers on "The Tuberculosis Nurse and the Tuberculosis Problem," by S. A. Knopf; "The Nursing Missionary," by Bishop W. A. Sellew; "Charity Nursing in a Tenement," "Nursing Method" and "Diet in Sickness and in Health."

Medical Control of Day Nurseries.—At the request of the Department of Health, the committee on public health, hospitals and budget of the New York Academy of Medicine discussed the problem of vaginitis in children as related to public schools, hospitals, day nurseries and other institutions last spring. Following this a committee was appointed to submit recommendations among which were the following: That those in charge of day nurseries should be informed of the great danger of infection and taught what precautions are necessary; that systematic examination of babies in day nurseries be undertaken by the Health Department to determine the frequency of infection and the measures necessary to diminish it. This matter has been carefully considered by the Health Department and a set of rules for day nurseries in the city of New York have been prepared which provide that each day nursery shall have attached thereto a regular physician of its selection, duly licensed under the laws of the state, and in good professional standing. The set of rules for the guidance of the medical officer calls for the examination of every child before admission to a nursery and for the regular examination of every inmate of a nursery every alternate week. A set of rules governing the matrons of day nurseries has also been provided.

New York City

Hospital Incorporated.—Twenty-two physicians of South Brooklyn have incorporated the Harbor Hospital for the treatment of indigent patients, or those who are able to pay only small fees for hospital care. The institution is housed in a four-story building on Fourth Avenue, and three of the four wards are now ready for occupancy.

Personal.—Dr. William M. Polk has returned from Europe. ——Dr. Lewis A. Sexton, resident physician at the Reception Hospital, has resigned to become assistant superintendent of the Johns Hopkins Hospital, Baltimore.——Dr. William S. Irwin, for many years surgeon on the United Fruit Company steamers, has resigned from the service.——The order of St. Sava has been conferred on Dr. Benjamin Jablons by King Peter of Servia.

Extends Campaign for Better Babies.—The New York milk committee is sending a post-card to health officers all over the country telling how the city is working for better babies. The card states that during the past seven years New York City has cut her infant death-rate more than 30 per cent. and that it is actually a safer city for babies to be born in than any other of the ten largest cities of the country. The card states further that no city with an infant death-rate around the 100 mark can afford to be satisfied. The work of the "Better Baby Week" is described, telling how business men were enlisted and financial support secured. The slogan adopted was "Better Babies, Better Mothers, Better City." The card closes with the question, "What is Your City Doing to Advertise 'Better Babies'?"

OHIO

Campaign against Loafers and Spitters.—Chief Wyman of the police department, and Safety Director Vodrey have started a campaign in East Liverpool against loitering and spitting on the sidewalks.

Hospital for Sick Babies.—The Youngstown Visiting Nurse Association has opened a hospital for sick babies, near the Fresh Air Camp in Mill Creek Park with Miss Wallace and Miss Headlings in charge.

Public Health Nurses in Kenton and Findlay.—The joint tuberculosis hospital board of Champaign, Clark, Madison and Greene counties have voted $1,200 a year for the employment of a public health nurse.

Campaign against Privies.—Dr. Arthur L. Jones, health officer of Lima, has started an active campaign against the thousand odd outhouses in that city. Either such outhouses must be improved to conform to the law or they will be condemned by the board of health.

Many Seals Sold in Ohio.—According to the report of the National Association for the Study and Prevention of Tuberculosis more than 44,000,000 Red Cross Christmas Seals were sold during the recent campaign in the United States. Of these 2,838,892 were sold in Ohio, placing this state second in rank to New York.

State Supervising Nurse.—Miss Margaret Kamerer, R. N., state supervising nurse in the Division of Public Health Education and Tuberculosis of the State Board of Health, resigned July 1, after having been identified with the state work for the past two years. When the Ohio Society for the Prevention of Tuberculosis started its first Red Cross Seal Contest in 1911, offering the services of a nurse for one month to each of the twelve cities selling the largest number of seals per capita, Miss Kamerer was the nurse chosen to institute the work. Miss Kamerer plans to rest through the summer and then intends to take a special course at the Teachers' College, Columbia University.

OKLAHOMA

Still in Europe.—Dr. A. M. Young and Dr. and Mrs. R. M. Howard, Oklahoma City; Dr. and Mrs. W. E. Wright, Tulsa, are marooned abroad.

School for Blind Opened.—Oklahoma State School for the Blind, Muskogee, erected at cost of $100,000 is now open and 150 students have been enrolled.

Personal.—Dr. W. S. Cary, Rankin, was seriously injured in an automobile accident recently.——Dr. A. L. Walters, Checotah, who was operated on a short time ago for appendicitis is convalescent.——Dr. John H. Barr, Reed, suffered amputation of a limb as the result of an accidental gun-shot wound.

PENNSYLVANIA

Personal.—Dr. Nathaniel S. Yawger has been appointed assistant to Dr. William G. Spiller, chief neurologist to the Philadelphia General Hospital.

New Officers.—Fifth District Medical Society at Brookside Park, York, July 29: president, Dr. William E. Wolff, Arendtsville; secretary-treasurer, Dr. Charles W. Eisenhower, York.

Media's Pure Milk Campaign.—The Woman's Club of Media has started a vigorous campaign to insure pure milk to that town and surroundings. This organization has already provided a visiting nurse for the community.

New Building for State Hospital.—During the next year there will be constructed at Rittersville State Hospital a building for male patients, one for male nurses and an isolation hospital for patients suffering from tuberculosis.

Pennsylvania Relief Fund.—At the semi-annual meeting of the Pennsylvania Railroad Voluntary Relief Association it was reported that during the last fiscal year the fund disbursed $2,520,847.22. The receipts during the same period were a total of $2,628,542.66. The fund had total assets of $2,911,494.93.

Marooned in Europe.—Among the physicians and teachers marooned in Europe are: Provost Edgar F. Smith of the University of Pennsylvania, Edward Robbins, secretary of the Board of Trustees of the University; Drs. E. E. Montgomery, Howard Hansel, William M. Sweet, James M. Anders and William Rodman.

Personal.—Dr. Stacy H. Rinehardt, a member of the staff of the State Tuberculosis Sanitarium, Cresson, has resigned and will practice in Pittsburgh.——Dr. A. H. Bernstein, East Scranton, is detained in Germany by reason of war conditions.——Dr. Benjamin F. Bartho, Mt. Carmel, was operated on for appendicitis at Fountain Springs Hospital, July 31, and is reported to be doing well.——Dr. Harry B. Stryker, Reading, is under treatment in his private hospital for septicemia, and is reported to be improving.——Dr. William J. O'Malley, West Scranton, has started for Columbia, S. A., where he is to be superintendent of the hospital operated by a large copper mining company.——Dr. Joseph C. Doane, superintendent of the Miners' Hospital at Shamokin, has been appointed chief resident physician at Philadelphia General Hospital.

Philadelphia

Baugh Institute of Anatomy to Be Extended.—Mr. Daniel Baugh, the founder and patron of the Baugh Institute, has purchased and added to his original gift, the premises 236 and 238 Pine Street, as an addition to the school, and has given $5,000 for the improvement and equipment.

More Baby Farms Discovered.—Following the death of three children in an unlicensed baby farm several weeks ago, three other such places have been discovered, where the houses are filthy and the milk was found to contain large quantities of laudanum. The three proprietors, all colored women, were given a hearing before Magistrate Boyle, August 6.

Carnival of Safety.—Safety day will be celebrated by the churches, September 20-27, by the public schools September 23. Carnival Day exercises will be held in Convention Hall, September 26, and the Convention of Safety will meet at Convention Hall, September 26 to 29. The city has taken space for its exhibit; the Pennsylvania Railroad and the Baltimore and Ohio Railroad and the Corporations Utilities Companies are all cooperating.

WISCONSIN

Contracts Awarded for Sanatorium.—Contracts amounting to $122,720 were let by the Milwaukee County Board, July 31, for work on the Wauwatosa Tuberculosis Sanitarium.

Prosecution for Use of Red Cross.—On the charge of violating the law referring to the use of the Red Cross emblem, fourteen Milwaukee physicians, representatives of railroads, undertakers and liverymen were arraigned in the federal court, July 30. The case has been set for trial on the first Monday in September.

Child-Welfare Staff Appointed.—Health Commissioner George C. Ruhland of Milwaukee has appointed the following staff for the child-welfare health stations: Waluka Park Pavilion, Drs. George Taylor, Frederick Gray, Albert W. Myers, Charles H. Stoddard and Thomas R. Bours; Lapham Park, Drs. George H. Fellman and Clarence F. Hardy; Kosciusko Park, Drs. John N. Rock and Henry J. Gramling.

Health Commissioner Upheld by County Society.—At a meeting of the Milwaukee County Medical Society, July 11, resolutions were adopted urging that the "city government should uphold the commissioner of health in his demand that the ordinance with regard to the test for tuberculosis in cows forming herds that are any part of the milk-supply of the city of Milwaukee, be drawn."

Personal.—Dr. Mazyck P. Ravenel, formerly professor of bacteriology at the Wisconsin State University, director of the state hygienic laboratories, has been appointed a member of the advisory board of the hygienic laboratory of the United States Public Health Service, Washington. Dr. Ravenel ended his duties at Madison, July 1, and has accepted the position of professor of preventive medicine and bacteriology at the public health laboratory of the University of Missouri.——Dr. Thomas F. Thompson has been appointed chief of the sanitary inspection force of the Health Department of Milwaukee.

GENERAL

Railway Surgeons to Meet.—The annual convention of the surgeons of the Rock Island System will be held in Des Moines, Ia., the first week in September.

Coming Meeting of Ohio Valley Physicians.—The annual meeting of the Ohio Valley Medical Association is announced to be held in Evansville, Ind., November 4 and 5.

Polish Physicians to Meet.—The fourth annual meeting of Polish physicians will be held at Buffalo, N. Y., September 7, under the presidency of Dr. Francis E. Fronczak.

Health Examiners to Meet in Florida.—The annual meeting of the American Public Health Association will be held in Jacksonville, Fla., December 1 to 5, inclusive. The two principal symposiums will be on negro health, and rural health organization and sanitation.

Interstate Society Meeting.—At the annual meeting of the Austin Flint-Cedar Valley Medical Society, held in Cedar Rapids, July 15, the following officers were elected: president, Dr. George Kessel, Cresco, Iowa; vice-president, Dr. Thomas U. McManus, Waterloo, Iowa; secretary, Dr. Charles F. Starr, Mason City, Iowa (reelected), and treasurer, Dr. Will L. Hearst, Cedar Falls, Iowa (reelected). Waverly, Iowa, was selected as the place of meeting for 1915.

The American Red Cross in European War.—At a joint meeting of the International and War Relief boards of the American Red Cross held in Washington, August 5, it was decided formally to tender the services of the society to the warring nations, and plans were initiated for the immediate issuance of appeals for relief funds and for placing medical officers and nurses trained for the work at the disposal of the forces. Announcement has been made that a fully equipped hospital ship carrying physicians, nurses and medical supplies will be sent to Europe, sailing under the Red Cross flag and under protection of the Geneva Convention and Hague Treaties.

Subscription Swindler at Work.—Attention is called to the operation of a swindler who recently has been operating among doctors and dentists, soliciting subscriptions for which he is not authorized. His offers concern generally a combined subscription to *The Literary Digest* and such medical publications as a dictionary, medical clinics and other medical works. Numerous aliases are used in signing receipts. He is described as about 21 years old, 6 feet tall, weighing about 180 pounds. Has black hair, very dark and large black eyes, a deep falsetto voice, and somewhat pale skin. A reward of $25 has been offered for his arrest. Communications should be sent to the Periodical Publishers' Association, 156 Fifth Avenue, New York City.

The Plague Situation.—Since the report made in THE JOURNAL of August 1, one more case of human plague has been reported in New Orleans. This fourteenth case was a

car cleaner 22 years of age, male, employed at the Louisville and Nashville shops at Girod and Front streets, who was taken ill July 29, with femoral bubo. There have also been discovered eleven additional cases of plague-infected rats, making thirty-two in all. On July 25 the Board of Health of New Orleans, on recommendation of the United States Public Health Service, adopted four ordinances having for their object the prevention of plague in the city and its eradication from infected foci. The first of these ordinances relates to the keeping of fowls and small animals, and provides that such animals can be kept only in rat-proof buildings. The effect of this ordinance is to keep rats away from food given to or left by these animals, thus removing one of the usual sources of food-supply of rats and mice. It also protects pet animals from infected fleas. The second ordinance relates to the position of vessels and water craft of all description at docks and wharves, and the method of loading and unloading; provides that no water craft shall be nearer than 8 feet from any dock or wharf; that all hawsers, chains or lines of any kind be equipped with rat shields or guards approved by the health officer of the city; that gang-plank, staging or other structures intended for loading or unloading, and by which rats might pass between wharves and vessels must not be left down except during actual loading or unloading, and that at these times there must be a guard at each gang-plank or staging to watch for rats and prevent them going to or from the vessels. When it is necessary to load or unload at night in addition to the guard at each gang-plank or staging, proper and sufficient lights must be furnished and the gang-planks must be whitened for a space of 10 feet. Crated cargo or empty barrels or boxes are not to be loaded or unloaded until inspection has shown that they are free from rats. The third ordinance provides that every building, outhouse and other superstructure now erected or hereafter to be erected at New Orleans shall be rat proofed in the manner given in detail in the ordinance. The fourth ordinance provides that the owner, agent and occupant of all premises improved or unimproved in New Orleans shall provide metal, water-tight containers with tight-fitting covers in numbers sufficient to receive the garbage accumulation of forty-eight hours from such premises. The object of the ordinance is to keep the garbage from serving as food for rats. All garbage must be kept in the prescribed garbage containers.——The Iowa State Board of Health through its secretary, Dr. W. L. Bierring, Des Moines, has started a campaign against rats and other rodents, in order to reduce to the minimum the risk of bubonic plague.——P. A. Surg. J. M. Gillespie, U. S. P. H. S., has been ordered to New Orleans and has been assigned to the charge of the fifth sanitary district which embraces the territory bounded by Elysian Fields Avenue to Jordan Avenue, and North Claiborne Avenue to the river.

CANAL ZONE

Personal.—Surgeon James C. Perry, U. S. P. H. S., has resigned as chief quarantine officer, and has been granted a leave of absence of a year, which he will spend in traveling.——Major Thomas L. Rhodes, M. C., U. S. A., has been transferred to the Panama Canal service, and has been appointed superintendent of the Colon Hospital.

Better Accommodations at Detention Stations.—The two-story building at the east end of the Colon Hospital, formerly occupied by officers, has been turned over to quarantine service as a detention station for the first-class passengers. The building contains forty rooms in addition to a large dining-room. The old detention station will be continued to be used for steerage passengers.

Private Hospitals.—The chief health officer of the Canal Zone issued on July 9 a circular setting forth that as a maintenance of private hospitals in the cities of Panama and Colon interferes seriously with the supervision and control of the department of health over sanitary matters, it is ordered that no private hospitals shall be established or maintained in the cities of Panama and Colon; any such hospitals being conducted in these cities shall be discontinued. Any one, who as a physician, owner, or person in charge of any private hospital in the cities of Panama or Colon, shall establish or maintain any such hospital after the prorogation of this order should be fined a sum of not exceeding $500 for each day after the continuance of such hospital.

Morbidity and Mortality for June.—The chief officer of the Canal Zone reports that during June the admission to hospitals and quarters was 1,511 or a rate of 381.09 per 1,000 per annum, as compared with 407.92 for the preceding month, and 472.50 for the corresponding month of 1913. The total number of deaths was 20 and of these 13 were due to disease. Two deaths were due to lobular pneumonia, organic diseases of the heart and tuberculosis. The disease causing the most admission and non-effective rates in hospitals was malaria with 62 per 1,000 per annum. The next highest admission rates in order were for venereal, digestive and respiratory diseases. These four classes of diseases caused 51 per cent. of all admissions. The admission rate to hospital and death-rate for black employees were 139.79 and 3.67 for 1,000 per annum as compared with 350.66 and 1.43 for white employees. The non-effective rate disease and injuries for black employees was 10-20 per 1,000 as compared with 18-67 for white employees, and the admission rate for hospitals for malaria was 53.23 per 1,000 per annum for blacks as compared with 143.37 for whites.

FOREIGN

War Interferes with International Congresses.—Among the international congresses that were to have been held in Europe this summer and fall are the congress on medical electrology and radiology, Lyons, July 27; on ophthalmology, St. Petersburg, July 28; conference on tuberculosis, Berne, September 2; the International League against Epilepsy, Berne, September 5; on neurology, psychology and psychiatry, Berne, September 7; the congress on criminal anthropology, Budapest, September 14; on occupational diseases, Vienna, September 21, and the congress of International Association for Sexual Research, Berlin, October 31.

Clashing International Congresses.—The propaganda committee in charge of the International Medical Congress, planned to be held at Munich in 1917, has issued an appeal to other scientific organizations begging them to arrange their meetings so as to leave that date open for the above international gathering. As at present planned, the International Surgical Association is to hold its fifth meeting at Paris in 1917, and numerous national annual meetings are arranged for that year in Germany and elsewhere. In order to prevent this dissipation of forces the committee urges other organizations to postpone their annual meetings that year and gather at the International Medical Congress, particularly as "radiotherapy of tumors," "biologic reactions," "diagnosis and treatment of tetanus," and "thrombosis," which are the subjects appointed for discussion at the Surgical Congress are all of special interest to internists as well. The committee says that it would be still better for the above organizations to hold their meetings as sections of the great medical gathering. This is what the anatomists have already decided on; the International Congress on Anatomy has been affiliated with the International Medical Congress as a section of the same. As the International Surgical Association meets every three years and the Medical every four years, once in twelve years they will clash. The appeal is signed by J. F. Lehmann, the well-known publisher of medical works, chairman of the propaganda committee.

CANADA

Association Meetings.—The Alberta Medical Association at its recent annual meeting elected Dr. Robert G. Brett, Banff, president, and Dr. J. G. Clark, Calgary, secretary-treasurer. Next year's convention will be held in Banff.——The Canadian Public Health Association promises to have a very successful convention at Port Arthur and Fort William, September 10 to 12.

Personals.—Among Canadian doctors caught in Europe when war was declared are: Mr Irving H. Cameron, William P. Caven, Duncan N. Maclennan, Richard A. Reeve of Toronto. Dr. A. Orr Hastings, Toronto, was successful in returning on the *Olympic*. There are still a large number of Canadians of the medical profession still on continental Europe as well as in England unable to return to their native land. Several have offered to serve in the British army.——Dr. Harvey Clare, assistant superintendent of the Toronto Hospital for the Insane, has been appointed medical director of the new Detention Hospital just opened in Toronto.——Dr. Keith Simon has been appointed pathologist to Grace Hospital, Toronto.——Dr. Walter S. Bloor, Kingston, has been appointed professor of biologic chemistry at Harvard University.——Dr. George S. Ryerson, Toronto, has been made an Honorary Chief of the Six Nations Indians with the name of Ra-de-ri-yoho—"Man-Who-Fights-His-

Way."——Dr. O. C. Gruner, assistant professor of pathology at McGill University, Montreal, has resigned and returned to England.

Manitoba Sanatorium for Consumptives.—The third annual report of the above institution includes the annual report for the year 1913 as well as the financial report for the year ending March 31, 1914. In February an infirmary building was opened with capacity for 27 patients. The full capacity of the institution is now 118, nearly twice of that when it was opened in 1910. In 1911 the patients admitted were 168; in 1912, 189; and in 1913, 232. This sanatorium aims to provide for the care of incipient cases for the whole province, leaving the advanced cases to the King Edward Municipal Hospital in Winnipeg. The patients in the sanatorium on Jan. 1, 1913, were 67; the patients admitted during 1913, 232; the patients discharged, 203; remaining, 96; and the total number admitted since sanatorium was established, 686. Of the 203 discharged, 1.5 per cent. were untreated; 8.3 apparently arrested; quiescent, 28.6; improved, 34.5; unimproved, 15.3; died, 11.8. In addition to the usual hygienic-dietetic means of treatment tuberculin was given to more than half the patients discharged, to 12 for less than one month; to 47 for from one to three months; to 68 for more than three months. Of 127 treated with tuberculin, there were 31 incipient, 44 moderately advanced and 52 far-advanced. In 1912 there were 492 deaths from tuberculosis in Manitoba, representing 8.5 per cent. of the total number of deaths, or 103.8 per 100,000 of the population. In Winnipeg during the years 1909 to 1912, the deaths have fallen from 150 to 96.

LONDON LETTER

THE CLINICAL CONGRESS OF THE SURGEONS OF NORTH AMERICA

LONDON, July 29, 1914.

Clinical Work of the Congress

The thousand American surgeons who have congregated here for the fifth clinical congress are unanimous in calling it a success. Though the twelve general hospitals and medical schools and the thirty special hospitals visited are scattered over the wide area of this city every visitor seemed without difficulty to reach his destination and see the work and man in which he was specially interested. At the hospitals lists of the operations were displayed on the doors, and as all the seats had been allotted there was no overcrowding. At first there was a run on the clinics of certain surgeons and the tickets for seats were exhausted in a few minutes; but on the second day the men seemed to seek the particular work in which they were interested rather than particular men, and the seats of no clinic were exhausted for half an hour. This was evidently due to the discovery that the London surgeons maintained a good general level of work and that ability was not in the hands of a few. It was generally agreed that in some respects the technic was not up to the American level. Thus in the theater of one surgeon of world-wide reputation it was observed that he did some work which should have been done by his nurses. However, a considerable improvement in methods was noted, and the tendency for American surgeons coming to Europe to visit German clinics in preference to English was declared to be passing away. Our visitors were full of praise for the ample preparations made at the hospital for their reception. Some idea of the vast amount of material for demonstrations will be gathered from the fact that at one hospital alone no fewer than 170 operations have been arranged.

A clinic which attracted great attention was Mr. Arbuthnot Lane's at Guy's Hospital. Before a crowded audience he removed the colon for intestinal stasis and removed wedges of bone and inserted a plate in a case of malunion of fracture of both bones of the forearm. While operating he kept up a running commentary which often traveled far from the case and was enlivened by witticisms which convulsed the audience. "Nature never does anything right; never give her a chance." "My views on intestinal stasis are so simple that they are not understood." "As long as a disease is medical and remains in the hands of the physician it is never understood; it is only when it comes into the hands of the surgeon that it is understood." The various membranes which are now described in peritoneal cavity and attached to the names of various persons he declared that he had described years ago. The thing to do was not to bother about giving them names but to understand that they were all adaptations due to Nature's attempt to counteract the effects of gravity in the upright posture. Every one of us was the result of adaptation to our surroundings. Anatomists did not realize this sufficiently and the subject was taught in an absurd fashion. If persons would only study the anatomy of the coal heaver and the shoe-maker they would begin to understand.

Another clinic which attracted great attention was Mr. Berry's at the Royal Free Hospital. Mr. Berry removed an exophthalmic goiter under local anesthesia with novocain. He also removed a parenchymatous goiter. He laid emphasis on the importance of exact hemostasis. Another operation followed with great interest was removal of a large malignant tumor from the pharynx with ligature of the external carotid artery. He operated for cleft palate by median suture with mattress sutures and no lateral incision. Mr. Berry did not like the flap operation and never performed it. He never saw a patient who spoke well some years afterward, although he had for long asked those who did it to show him one.

The Opening Session

Instead of the usual social functions, the evenings are devoted to papers and discussions. After a presidential dinner given by Dr. Franklin Martin, the formal opening of the congress took place at the Hotel Cecil. Sir Rickman J. Godlee, ex-president of the Royal College of Surgeons, in an address of welcome invited the delegates to a reception at the college where there was the most important museum in the world. They would show the delegates some of the treasures which they would select as far as possible to illustrate clinical facts. Dr. J. B. Murphy, president of the congress, said the work to be conducted this week was a colossal undertaking. Such a task had never before been undertaken by the congress away from home. American surgeons would return with a high impression of London surgery. High as they had esteemed it before, they would esteem it higher still. They would return with an admiration and affection for the profession and people of this great land, and with a feeling that science was a brotherhood that extended round the globe.

GREETING BY AMERICAN AMBASSADOR

The American Ambassador, Mr. Page, extended a warm greeting to the many distinguished citizens of the United States present. He said he need not tell them that they were heartily welcome to London. Their English friends had shown them that. One of the most distinguished teachers of surgery in this country remarked to him that he frequently told his students that no man had a right to consider himself well started in the profession of surgery unless he had been to the United States to see the skill that American surgeons possessed. Now that 1,000 American surgeons found it well worth while to come to England to see how the distinguished surgeons of this kingdom did their work, he could say, "honors easy." He assumed that Englishmen and Americans were anatomically alike, and in the process of time, with a better acquaintance, they would become more and more politically akin. It was a great joy for them to know that at no time in the history of these two great nations was there ever such a cordial and complete understanding of each other as there was at the present time.

DR. RODMAN'S ADDRESS

Dr. W. L. Rodman, President-Elect of the American Medical Association, said that while the congress was not an integral part of the Association, its members were also members of the latter. Hence what concerned them could not fail to receive the sympathetic attention of that great body, the largest medical organization in the world, to whom they all owe their first and best allegiance. Great and varied as have been the activities of the American Medical Association, it had not hitherto specially concerned itself with postgraduate instruction. Its work had been in other spheres, and who would say it had not been well performed? That splendid organization through its various standing committees or councils had accomplished a mighty work in the decennium. The Council on Medical Education had in that short time done more than had been accomplished in the previous century, so that now American schools were fully abreast of those anywhere. The Council on Health and Public Instruction had carried its beneficent work into every state of the Union, compelling all to recognize that, as the public health was the greatest asset of the people, artificial barriers in the nature of state lines must vanish, and where all of the people were so vitally concerned, federal control was essential. A member of the American Clinical Association had told him that the visits of this body to the various clinics of our own and other countries had so impressed some of the members

that the conception of an American Congress of Surgeons resulted. It was natural and generous that the few who had profited by the clinical work of others should, in turn, wish to see a higher standard of clinical efficiency throughout the country. Hence this congress with its first meeting in Chicago in 1910; in Philadelphia the following year; then in New York; to meet again in Chicago in 1913 with an enrolment of more than 4,000. He traced the development of the American College of Surgeons and said that this body, supplementing the Clinical Congress of Surgeons and the American Medical Association, would fill an honorable rôle in the standardization of surgery throughout the world.

Injuries to the Knee in Sports

In the division of general surgery, Mr. Robert Jones of Liverpool read a paper on "The Internal Derangements of the Knee" with special reference to the derangement of the cartilage to which football players and cricketers are liable. He had chosen this subject because little had been written about it in America. It was a surprise to him, because their games, like our own, were rough and we in England knew to our cost that American youths were skilled and strenuous. He was credibly informed that the anatomy of the knee joints of American youths differed but little from our own, and he was forced to conclude either that their cartilages were more securely placed than ours or, which was most unlikely, that the condition was not so generally recognized as it should be. By far the most common derangement of the knee was injury to the internal semilunar cartilage. In nearly all cases the cartilage was displaced inward, and on those rare occasions in which a protrusion had been felt from the outside it was due to hemorrhage following a tear, localized bruising of tissue, or buckling of cartilage, accompanied by effusion, which gave rise to an irregular outline of the articular margin. The most constant symptom of a displaced or fractured semilunar was a sudden inability to extend the knee. The most frequent cause of the displacement or fracture was strain thrown on the internal lateral ligament while the knee was flexed and the tibia rotated outward. The force necessary to cause the derangement in a first injury was usually severe, and the pain acute. The injury might often be encountered on the football field. All movements of the cartilage must be prevented until union of the torn structures was complete, and no lateral strain must be allowed until the lateral ligament, so often injured, had had time to effect a recovery. The injured joint should be treated by complete rest in full extension for four or five weeks. Instead of this, the patient was usually allowed to get up and walk in a week or a fortnight. This was a grave mistake. He refused to operate in any case immediately after the first displacement, as so large a proportion of these patients recovered under appropriate treatment; nor did he encourage operation in cases in which the recurrent trouble was painless and was never followed by effusion in the joint. But he strongly advocated operation when the recurrence was sometimes followed by acute symptoms, and he encouraged it in all recurrent cases in which a strenuous athletic life was a means of livelihood or a physical necessity. Operation was a positive necessity in the case of men who worked among moving machinery, or stood in positions where a yielding knee might mean disaster.

Laryngofissure

In the division of surgical specialties, E. Schmiegelow of Copenhagen, Denmark, read a paper on the "Results of Operations (Laryngofissure) for Cancer of the Larynx." He showed the excellent results which could be obtained in cases in which cancer attacks the vocal cords. He warmly recommended the operation of splitting the larynx, commonly called laryngofissure. This operation was founded in England through the efforts of the late Sir Henry Butlin and Sir Felix Semon, to both of whom Schmiegelow paid a warm tribute. His results showed a lasting cure of more cases than can be proved with cancer in any other part of the body.

Sir St. Clair Thomson gave statistics by which it appeared that he had not lost a case from this operation, and that some patients were alive and well ten years afterward. He pointed out that Schmiegelow was able to record more cases than any other surgeon had ever done in any city of the British Empire. It looked as if British inventions had to go abroad and be born again before they were accepted in the land of their birth. The public did not seem to realize the importance of hoarseness or the profession to know what excellent results could be secured by laryngofissure. He made an appeal for an expert examination of the vocal cords in any case of hoarseness which did not clear up within three weeks. His own statistics showed 30 per cent. of lasting cures for intrinsic cancer of the larynx. Many of these cases were shown in King's College Hospital.

(To be continued)

PARIS LETTER

Paris, July 24, 1914.

Personal

Dr. Couvelaire, agrégé, has been appointed professor of clinical obstetrics at the Faculté de médecine de Paris, vice Dr. Pinard, retired.

The Académie des sciences has just awarded a prize of 3,000 francs ($600) to Dr. H. Vincent, professor at the Ecole d'application de médecine et de pharmacie militaires de Val-de-Grâce, for his work on the typhoid bacillus and typhoid fever. The La Caze prize (10,000 francs, $2,000) was awarded to Dr. Gley, professor at the Collège de France, for his works on physiology.

At its session on July 21, the Académie de médecine elected Dr. Mairet national associate. Dr. Mairet is professor of the clinic of mental and nervous diseases at the Faculté de médecine de Montpellier, and has been national correspondent in the section of pathologic medicine since 1894.

Lectures on Eugenics

I have already spoken of the formation of the Société française d'eugénique, which publishes a special magazine (The Journal, Jan. 18, 1913, p. 221). This society will organize, at the beginning of the school year, a series of lecture courses in eugenics at the Ecole des hautes études sociales. M. Edmond Perier, director of the Muséum d'histoire naturelle, will show the relations which exist between eugenics and biology; Dr. Apert, physician at the Andral hospital, will discuss the questions of heredity related to those of eugenics; Dr. Papillault, professor of sociology at the Ecole d'anthropologie, will show how, thanks to eugenics, a well-defined selection may be made; Dr. Pinard, former professor of clinical obstetrics at the Faculté de médecine de Paris, will study eugenics and child-culture; Dr. Weiss, professor at the Faculté de médecine de Paris, will discuss eugenics in its relation to physical culture; Dr. Schreiber, head of the clinic affiliated with the Faculté de médecine de Paris, will show how one may, how one ought to understand eugenics from the point of view of marriage; Dr. Roussy, director of scientific research at the Ecole des hautes études, will study eugenics and the perfecting of the human race.

The Publication of Case Histories, and Professional Secrecy

The conference of lawyers of the Paris supreme court recently discussed the question as to whether or not the physician who publishes observations made at a hospital in a scientific magazine without having asked permission of the patient has violated the obligation of professional secrecy. The conference decided in the negative.

The Esperantist Congress and Physicians

The tenth international congress of Esperanto will be held at Paris, August 2-10, 1914. On this occasion the Association médicale espérantiste universelle, which counts among its honorary members Professors Bouchard, Richet, Gariel and Broca, will send numerous delegates from different nations to Paris. The meetings will be held in one of the amphitheaters of the Faculté de médecine. Technical questions of professional interest will be publicly discussed in Esperanto.

Death of Paul Reclus

Dr. Paul Reclus, professor of clinical surgery at the Faculté de médecine de Paris, whose death was noted in this department last week, was 67 years old, was a member of the Académie de médecine, and last year a commander of the Legion of Honor.

Paul Reclus produced considerable scientific work. He wrote a manual of external pathology in collaboration with Kirmisson, Bouilly and Peyrot, a treatise on surgery in collaboration with S. Duplay, a treatise on surgical therapeutics in collaboration with Emil Forgue and a book on medico-chirurgical practice—all classics to-day. The name of Reclus is associated with local anesthesia by cocain and novocain and more recently with that of the disinfection of wounds by tincture of iodin and with the conception of cystic disease of

the nipple. He was a prudent and conscientious surgeon and a remarkable teacher.

Election of Dr. Magnan to the Vice-Presidency of the Academy of Medicine

On July 28, the Académie de médecine elected Dr. Valentin Magnan vice-president (who will automatically become president in 1915) in place of the late Dr. Duguet. Dr. Magnan is physician at the Asile Sainte-Anne, president of the Société médico-psychologique and author of a thesis on the relation between general paralysis and insanity which was crowned by the Académie de médecine in 1867.

The Congress for the Advancement of Science

Circumstances have made the Congress for the Advancement of Science held this year at Havre, a Franco-English scientific affair. A large number of members of the British association accepted the invitation of the French association. At the opening session an interesting address was delivered by Sir William Ramsay, president of the delegation from the British association. One of the bonds which unite England and France, he said, was science; "The immortal name of your Pasteur is associated with that of our Lister. I do not exaggerate when I say that to these two men the world owes a debt greater than that to any others. They have saved millions from death. They have saved more lives than the most bloody wars have destroyed."

EMIGRATION AND HYGIENE

In the section of hygiene, Dr. Clerc, maritime sanitary physician, read an interesting paper on emigration. He suggested that an international conference be held to fix uniform conditions for emigration and to secure the return to the country of their origin of all emigrants not allowed to enter the country to which they went. This resolution was unanimously adopted.

Serious Poisoning by Boric Acid Dressing

While wet boric acid solution dressings are harmless, this is not true of dry dressings of powdered or crystallized boric acid. On July 22, Dr. Savariaud reported to the Académie de médecine, a case of a child of 8, deeply burned in the abdominal wall and thighs, whose wounds were powdered with boric acid. The same evening signs of serious intoxication (headache, vomiting, pulse 120, etc.) manifested themselves. The next day after another dressing with boric acid, the symptoms of poisoning were accentuated and diarrhea, prostration and hypothermia appeared. For some days the child's life was in danger; it would certainly have been lost if the boric acid dressings had not been entirely discontinued.

During thirty years, Savariaud has found record of nine deaths from boric acid poisoning.

Offensive Familiarity Toward Hospital Patients

Complaints have been addressed by patients to M. Mesureur, director of the general administration of the Assistance Publique that the employees of the hospitals and the medical students *tutoied* the patients. [The *tutoiement* is the use of the singular (tu, toi) in place of the plural pronoun of the second person (vous). It is used to express familiarity, somewhat as we would use the Christian name, that is, to intimates and inferiors.] M. Mesureur has ordered directors of hospitals to put an end to such misplaced and humiliating familiarities, especially because hospital patients are temporarily in a position where they are unable to protest.

BERLIN LETTER

BERLIN, July 25, 1914.

Personal

Our well-known professor of anatomy, W. Waldeyer, celebrated the fiftieth anniversary of his doctorate July 20.

Dr. Abel, a member of the Prussian medical state department, has received a call to succeed Professor Gärtner at the Hygienic Institute at Jena. Abel was formerly privat-docent of bacteriology in Greifswald.

Professor Albrecht of Berlin has been called to the ear clinic at Tübingen as successor of Wagenhäuser.

The Frankfort University

The plans have been made to have the new university of Frankfort-on-the-Main opened October 18 in the presence of the Kaiser. The announcement of lectures just published shows that almost all of the teaching places (Dozentenstellen) are already filled. Only one regular professor is assigned for each department. In the majority of cases, the medical men already at work at Frankfort in the municipal and other hospitals have been appointed as professors, such as Schwenkenbecher for internal medicine, Rehn for surgery, Walthard for gynecology, Herxheimer for dermatology, Edinger for neurology, Ehrlich for experimental therapy, etc. To date only the chair for legal medicine has not been filled.

Specialist and General Practitioner

The Mecklenburg Physicians' Association (Aerzte-Vereins-Bund) at its last session adopted the provision in its medical code of ethics that the simultaneous designation physician and specialist physician is not allowable. A similar provision exists in the codes of other medical associations.

Conviction of Dr. Billfinger

The president of the Association of Antivaccinationists of Germany, Sanitary Councilor Billfinger, was sentenced by the Medical Court of Honor for the kingdom of Saxony to a fine of $250 (1,000 marks) and deprivation of the active and passive franchise in the medical chamber (*Aerztekammer*) for three years because he accepted the position of medical director of the drugless therapy institute—*Naturheilanstalt*—of the notorious quack, Bilz, in spite of the fact that he must have known that absolutely intolerable conditions prevailed there in the treatment and care of the patients. As I informed you some time ago, the Bilz Sanatorium was closed by the police on account of these conditions, which were combined with moral danger to the patients.

Prize Offered by the Prussian Academy of Sciences

A prize of $1,250 is offered for the best study of "Experience as a Factor in Perception." The exact subject is stated as follows: "The share of experience in observations of the human senses is to be systematically investigated and presented. It is not necessary to collect all the individual facts in physiologic and psychologic literature, but the various forms of sense perception are to be defined as carefully as possible according to the manner and limit of their activity, and the common factors and conformity to law in the various fields of the senses are to be set forth. Exact repetition of the observations which are utilized is essential. Extensive independent experimental investigations of decided value are desired." The prize amounts to $1,250 (5,000 marks). The competing articles may be in German, Latin, French, English or Italian. They must reach the bureau of the academy in the usual form, before Dec. 31, 1916.

International Public Health Work in Jerusalem

More than a year ago, under German initiative, an international health office was established in Jerusalem under the direction of Mühlens, the scientific assistant in the Hamburg Institute for Marine and Tropical Diseases. According to a recently published article of Nocht, director of the Institute for Marine and Tropical Diseases, the support of the institute at Jerusalem at present is shared in common by the German Committee for the Campaign against Malaria in Jerusalem; by Nathan Strauss of New York and by the Society of Jewish Physicians and Scientists for Sanitary Interests in Palestine. The German committee supports the general department for combating malaria, and its chairman is at the same time the director of the institute. Nathan Strauss supports the hygienic and bacteriologic department of which the heads are Drs. Brünn and Goldberg. The Society of Jewish Physicians and Scientists has taken over the department for protection against rabies, originated by the German committee, the director of which is Dr. Behan. An accessory department for the prevention of eye diseases (director, Dr. Feigenbaum) has been added.

The most important task of the office is the malaria campaign which must be prosecuted in three directions. It is necessary, first, to eradicate the parasites in man by the thorough treatment of patients and also of the apparently healthy germ-carriers. As a general rule, the children in Jerusalem are infected, as is usual in old malarial foci. The treatment of schoolchildren with quinin, begun by Mühlens with great success, should be thoroughly carried out. The tactful method of Mühlens easily overcame the superstition and fear of the Mohammedans, their wives and children. Only in the beginning did the taking of blood meet any opposition. The success of the antimalaria treatment in the schools was soon apparent. The general attendance at school which was formerly much disturbed by sickness, became much more regular. The children were more active and their

work was better done. The number of new attacks of malaria grew remarkably less. Quinin, generally in a sugar-coated or tasteless preparation, was readily and regularly taken by the children. The success with schoolchildren facilitated the introduction into families and homes. Dr. Brünn secured the same results in the special Jewish quarters.

Even in the dry season, Jerusalem is a city much infested with mosquitoes, especially with anopheles, the malaria carrier. Their destruction is the second task in the campaign against malaria. In Jerusalem mosquitoes, in addition to the dark dwellings of the inhabitants, infest the numerous cisterns which are of large extent, very old, defectively built and easily accessible to the mosquito. Jerusalem is still exclusively supplied with rain-water for drinking purposes. The cisterns are also the breeding-places of the anopheles mosquito, and many swarm with mosquito larvae. If the cisterns were screened against mosquitoes, the mosquito plague, under present conditions, would cease in Jerusalem.

By closing the cisterns to mosquitoes and doing away with the present unhygienic method of drawing water by pails which are let down through larger or smaller openings, generally left uncovered, and by replacing the pails by pumps in well-covered cisterns, it has been possible already to diminish the mosquito plague to a remarkable extent in many parts of Jerusalem.

Here the third form of the malaria campaign must begin by the education of the population, awakening their interest and winning their active cooperation in the removal of nuisances, and by permanent inspection of the cisterns by a health commission (mosquito commission). The authorities of the city have, moreover, made a permanent annual contribution to the work of the health office.

The campaign against tuberculosis has proved to be much more difficult and less promising; it will also require much larger means. Particularly the improvement of the incredibly wretched dwellings of the native population, Jews as well as Mohammedans, will require the efforts of many years and the expenditure of considerable funds. Moreover, carrying out a long period of curative treatment such as is necessary in tuberculosis will be found to be very difficult.

The campaign against other infectious diseases in Jerusalem will depend chiefly on the introduction and progress of a general communal health movement, of which hitherto there have been only very small beginnings. According to the latest newspaper reports, the supply of the city with good spring water by a system of water-pipes has now been undertaken by a French company. The accomplishment of this plan would render the suppression of typhoid, dysentery and other infectious diseases much easier, especially among the poorer population, who depend on the old cisterns often contaminated with water from the streets. It remains to be seen whether the large institutes supported by European funds will give up their beautiful, roomy and entirely unobjectionable cisterns after the establishment of the water system, and especially whether the removal of the anopheles nuisance will be particularly assisted by the introduction of a public water-supply.

Marriages

LOUIS FLOYD MURRAY, M.D., Santa Fe, N. Mex., to Miss Adelaide Dickinson of Washington, D. C., at Albuquerque, N. Mex., July 27.

DONALD LONSON STILWELL, M.D., Detroit, Mich., to Miss Maude Marie Kellerman of Pittsburgh, Pa., June 27.

OSCAR WILLIAM LINDORFF, M.D., to Miss Hedwig Charlotte Wahlburg, at Chikungehang, China, June 29.

ACHILLES EDWARD DAVIS, M.D., to Miss Josephine K. Robinson, both of New York City, July 30.

FRANK HUGHES LALLY, M.D., Varina, Ia., to Miss Mary Catharine Barry of Jackson, Neb., July 15.

WILLIAM EDWIN JOINER, M.D., to Miss Alice Belinda Johnson, both of Seattle, Wash., July 30.

CHARLES ROSS BENNETT, M.D., Graham, Ky., to Miss Anna J. Patton of Hartford, Ky., June 23.

SETH FENELON ARNOLD, M.D., Boston, to Miss Irl Gann of Benton, Ark., at Boston, June 27.

WILLIAM J. BUCK, M.D., to Miss Catherine Mary Hampton, both of Gainesville, Fla., July 8.

Deaths

Philip Matthew Wagner, M.D. Ohio Medical University, Columbus, 1896; a Fellow of the American Medical Association; of Canal Dover, Ohio; president of the Tuscarawas County Hospital; a specialist on diseases of the eye, ear, nose and throat; a member of the board of education for ten years; local surgeon of the Baltimore and Ohio System; once a member of the city council; a member of the Seventy-Sixth General Assembly; while studying in Germany, was taken ill with cholelithiasis in Berlin, and died while undergoing operation for this condition, July 24, aged 46.

Grace Greenwood Prior Yankauer, M.D. Woman's Medical College of the New York Infirmary for Women and Children, New York City, 1898; a Fellow of the American Medical Association; assistant surgeon to Mt. Sinai Hospital, New York City, and a member of the staff of the New York Eye and Ear Infirmary; was instantly killed in an accidental fall from the window of her apartment in New York City, July 28, aged 40.

Frank Ely Osborne, M.D. University of Nebraska, Lincoln and Omaha, 1903; postmaster of McAllen, Tex.; a member of the State Medical Association of Texas; formerly physician to the Nebraska Institution for Feeble-Minded Youth, Beatrice; while attempting to cross the tracks of the St. Louis, Brownsville and Mexico Railroad, near Donna, Texas, in his automobile, July 30, was struck by a train and killed, aged 36.

Adelaide M. Griffin Tucker, M.D. Woman's Medical College of the New York Infirmary for Women and Children, New York City, 1895; member of the staff of the Bradford City Hospital; a member of the Medical Society of the State of Pennsylvania; for several years a specialist in diseases of the eye, ear and throat of Bradford, Pa.; died in the Bradford Hospital, July 24, after a surgical operation, aged 43.

Francis M. Bennitt, M.D. New York Homeopathic Medical College, New York City, 1883; for many years a member of the school board of Springfield, Mass.; a member of the American Public Health Association; and a member of the staff of the Wesson Memorial and Wesson Maternity Hospitals; died at his home in Springfield, about July 29, aged 57.

Thomas E. Heenan, M.D. University of Pennsylvania, Philadelphia, 1868; for many years in the diplomatic service of the United States; for twenty-three years consul at Odessa, Russia; and later consul at Newchwang, China; Warsaw, Russia, and Fiume, Austria-Hungary; died in the latter city, June 26, from heart disease, aged 62.

George Irvin Barwick, M.D. University of Maryland, Baltimore, 1894; a member of the Medical and Chirurgical Faculty of Maryland; for many years a practitioner of Kennedyville, Md.; but for the last four years a resident of Baltimore; died at his home in that city, July 25, from angina pectoris, aged 45.

Thomas Carman Hodge, M.D. Atlanta College of Physicians and Surgeons, 1908; of Atlanta, Ga.; a member of Southern Medical Association and the Medical Association of Georgia; assistant to the chair of anatomy in his Alma Mater; died in a sanitarium in Atlanta, July 28, aged 29.

Arthur Parker Sargeant, M.D. University of Minnesota, Minneapolis, 1913; of Minneapolis; formerly intern in the Minneapolis City Hospital; while endeavoring to save a woman from drowning in Lake Carlos, near Alexandria, Minn., July 30, was drowned, aged 28.

William Henry Carpenter, M.D. Philadelphia University of Medicine and Surgery, 1869; Dartmouth Medical College, Hanover, N. H., 1876; of Boston; a specialist on diseases of the eye, ear, nose and throat; died at his home in Brookline, Mass., July 23, aged 77.

John Irving Russell, M.D. Willamette University, Salem, Ore., 1909; a Fellow of the American Medical Association and proprietor of the Lakeview, Ore., Sanitarium; died in the Good Samaritan Hospital, Portland, Ore., July 25, from nephritis, aged 28.

Robert P. Page, M.D. University of Pennsylvania, Philadelphia, 1861; a member of the medical society of Virginia; surgeon in the army throughout the Civil War; died at his home in Berryville, Va., July 26, aged 76.

Charles Allen Holbrook, M.D. Bennett Medical College, Chicago, 1878; of Dorchester, Neb.; died in the Nebraska State Hospital, Lincoln, July 14, from senile debility, following a cerebral hemorrhage, aged 73.

Sherman M. Beeman, M.D. Washington University, St. Louis, 1881; for many years a practitioner of Chillicothe, Mo.; died at the home of his son in Denver, Colo., July 27, from senile debility, aged 77.

John Henry Griffith, M.D. Jefferson Medical College, 1870; a Fellow of the American Medical Association; twice mayor of Philipsburg, N. J.; died suddenly at his home in that city, July 28, aged 72.

William T. Benson, M.D. College of Physicians and Surgeons, Kansas City, Kan., 1902; of Kansas City; died at the home of his father in that city, July 29, from appendicitis, aged 34.

James Ball Rogers (license, Louisiana) for many years a practitioner of Allen Parish, La.; died at his home near Kinder, La., July 16, from disease of the heart and kidneys, aged 76.

Charles E. Booth, M.D. Rush Medical College, 1872; for twenty-five years a practitioner of Minneapolis; died in the Asbury Hospital in that city, July 25, aged 74.

George W. Williams, M.D. University of Louisville, Ky., 1878; for thirty-one years a practitioner of Pittsburg, Kan.; died at his home in that city, July 29, aged 64.

Charles Thomas Buffum, M.D. College of Physicians and Surgeons in the City of New York, 1877; of New York City; died at Wainscott, L. I., July 29, aged 61.

Lee Osborne Scott, M.D. Rush Medical College, 1905; a member of the Illinois State Medical Society; died at his home in Rockford, Ill., June 26, aged 36.

Herman Berberich, M.D. Jefferson Medical College, 1901; of Philadelphia; died from heart disease while surf-bathing at Wildwood, N. J., July 26, aged 36.

Gustave A. Heidel, M.D. St. Louis College of Physicians and Surgeons, 1897; died at his home in Muscatine, Iowa, July 16, from heart disease, aged 42.

Herbert Forrest Williams, M.D. Hahnemann Medical College, Philadelphia, 1896; died at his home in Philadelphia, July 26, from tuberculosis, aged 42.

Carl G. Lindeblad, M.D. Rush Medical College, 1908; formerly of La Grange, Ill.; died in his apartments in Albuquerque, N. Mex., July 30, aged 33.

James Turner Persons, M.D. University of Alabama, Mobile, 1890; died at his home in Bayou Labatre, Ala., about July 18, from heart disease.

Hilary F. Oliver, M.D. University of Pennsylvania, Philadelphia, 1858; of Birmingham, Ala.; died in Woodlawn, Ala., May 18, aged 76.

Sanford B. McClure, M.D. Cincinnati College of Medicine and Surgery, 1874; died at his home in Allegany, N. Y., June 30, aged 79.

Albert Roberts Pyne, M.D. University of Toronto, 1887; died at his home in Toronto, July 6, from cerebral hemorrhage, aged 65.

Ezra John Guyott, M.D. Hahnemann Medical College, Chicago, 1882; died at his home in Utica, N. Y., June 22, aged 60.

Almas P. Bogue, M.D. Georgetown University, Washington, D. C., 1872; died at his home in Washington, May 10, aged 66.

Alger William Rice, M.D. New York University, New York City, 1880; died at his home in Marion, Mass., May 12, aged 59.

James Raizon, M.D. Rush Medical College, 1891; died at his home in Trinidad, Colo., July 15, from heart disease, aged 59.

Christopher Johnston, M.D. University of Maryland, Baltimore, 1880; died at his home in Baltimore, June 26, aged 58.

Alfred Royce Brundage, M.D. Albany (N. Y.) Medical College, 1890; died at his home in Chicago, July 20, aged 54.

John L. Van Alstyne, M.D. Albany (N. Y.) Medical College, 1862; died at his home in Binghamton, N. Y., May 18.

Joseph William Russell, M.D. Jefferson Medical College, 1907; died at his home in Cleveland, Ohio, July 15, aged 30.

William Watson McCulloh, M.D. University of Pennsylvania, 1898; died at his home in Baltimore, July 19.

John Joseph Mitchell, M.D. Harvard Medical School, 1902; died recently at his home in Charlestown, Boston.

Joseph Remi Tanguay, M.D. Detroit Medical College, 1871; died at his home in Detroit, July 20, aged 69.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

PODOLAX

"Podophyllin With the Gripe Taken Out" Proved a Phenolphthalein Nostrum

L. E. Warren, Ph.C., B.S.

CHICAGO

"PoDoLax" is being extensively advertised as a laxative by the E. E. Sutherland Medicine Co. of Paducah, Ky. The claim is made that:

"PoDoLax is not an accidental discovery nor an Indian Remedy."

It is claimed that on the other hand:

"It is the result of hard study by the brightest minds in the medical profession. The pleasant taste is the effect of the work of a first-class chemist, so combining the drugs of the prescription as to eliminate the objectionable taste and at the same time retain their strength."

The name "PoDoLax" is apparently intended to suggest that podophyllum is the chief constituent of the remedy, and this implication is quite unmistakably conveyed in the following expression found in one of the advertisements for the preparation:

"PODOLAX

Podophyllin with the Gripe taken out."

Also in a circular devoted to the exploitation of PoDoLax and other nostrums the following statements are found:

"Now a new name is before the world, which is made up from the words 'Podophyllin' and 'Laxative.'

" 'PoDoLax' is the word.

" 'PoDo' from Podophyllin—

" 'Lax' from Laxative or gentle rather than purgative.

"PoDoLax is Podophyllin with the gripe taken out. The only objection ever made to Podophyllin was the griping, and that is entirely overcome in PoDoLax.

"PoDoLax is humanity's oldest and best proven remedy, made pleasant.

"Mandrake is the Biblical term and is first mentioned in Genesis also in the songs of Solomon.

"Some of the doctors . . . still give Podophyllin because ever since the days of Jacob, Mandrake, as it was called in the Bible, has been the best of all to start the Bile.

"A harmless, never-failing, natural remedy, as pleasant to take as maple syrup. . . ."

Aside from these statements and the declaration on the label that PoDoLax contains 6 per cent. of alcohol, no information concerning the composition of the preparation is given. Since from its physical appearance it seemed improbable that the preparation could contain much resin of podophyllum it appeared worth while to examine a specimen of FoDoLax with the view of determining its laxative constituents.

The product is sold in 5-ounce panel containers which retail at fifty cents. The preparation examined was a dark brown, syrupy liquid having an aromatic, sweet taste and an odor like a mixture of anise, sassafras and wintergreen. It contained a considerable quantity of finely divided crystalline material in suspension. Some of this was separated by filtration, washed with water and identified as phenolphthalein by the usual tests. Another laxative substance was also present, which appeared to be an extract of senna. Large quantities of sugar (sucrose) were present. Small quantities each of alcohol, ammonium compounds, oil of wintergreen and possibly other volatile oils were also found. A determination of alcohol gave 4.47 per cent. by volume. The residue on drying amounted to about 71.5 gm. per hundred c.c. Podophyllin was absent or not present in more than traces. Phenolphthalein was determined and about 1.6 gm. per hundred c.c. found. This is equivalent to about 1.8 grain in each directed dose of PoDoLax. Whether or not other laxatives are present in small quantities matters

little since phenolphthalein and senna are the essential medicinal ingredients, of which the former probably predominates. From the results of the examination it appears that PoDoLax is an aromatized syrup containing phenolphthalein in suspension and fortified by the addition of an extract of senna. Phenolphthalein is a synthetic compound made from coal-tar. Therefore, PoDoLax cannot be a "natural remedy" and to advertise such a preparation as

"Podophyllin with the gripe taken out"

is to offer it under claims that are misleading, false and fraudulent. That the manufacturer knows this is perfectly evident from the fact that these lying claims do not occur on the label of the trade package or in the circulars which accompany it—where they would come within the purview of the law—but are found in advertisements and in circulars which reach the consumer in other ways. Since the Biblical mandrake, *Mandragora autumnalis*,[1] has no botanical or therapeutic relation to the American mandrake, *Podophyllum peltatum*, the attempt to give Biblical sanction to the exploitation of PoDoLax by connecting it with the mandrake of the Bible is to be expected from the usual ignorance, stupidity and dishoresty of the "patent medicine" exploiter.

To sum up:

1. PoDoLax is sold under the claim that it contains podophyllin, whereas it contains none, or at least not more than traces. Its chief medicinal ingredient is phenolphthalein.

2. The false claims concerning the composition of PoDoLax do not occur on the labels of the trade package or in the circulars which go with it, but are made in other ways. This shows the exploiter to be aware of the fraud and deceit practiced in making and selling the nostrum.

Correspondence

"Abuse of Normal Salt Solution"

To the Editor:—In The Journal, July 25, 1914, p. 307, appeared an article on the "Abuse of Normal-Salt Solution" which prompts me to make a few remarks on scientific fairness.

This article, like not a few others of recent years, is apparently an effort to discredit the work of Prof. M. H. Fischer, and incidentally to introduce a subject that has nothing to do with the title, namely, the use of glucose solutions as substitutes for normal saline. This article is, in one particular respect, quite unlike most of the others of similar trend; that is to say it makes use of hearsay evidence, faulty case reports, and undigested references to the literature.

I shall make no attempt to discuss all the references cited by the author. Many of them deserve citation in connection with edema and nephritis, but also many of them do not. One of the most noteworthy instances is the paper of Newburgh (*Boston Med. and Surg. Jour.*, 1913, clxix, 40). Newburgh's work was a perfectly satisfactory bit of observation which almost, if not completely, supported Fischer's contentions, though Newburgh did not interpret it that way, owing perhaps to his (at that time) ignorance of the physiochemical action of salts on colloids. Otherwise he would have known that to discontinue digitalis and magnesium sulphate and place his patients on alkaline sodium chlorid solution would not tend to improve their condition.

The really laughable citations are two—one from Bain (*Brit. Med. Jour.*, Oct. 5, 1912) and one from Stevenson (same journal, Dec. 28, 1912, p. 1749). Bain's case was one of a child who was edematous. Bain was told that the child may have eaten salt. The physician ordered that the child should have no salt with its food and that all salt should be placed beyond its reach. He prescribed a *simple mixture* of magnesia and compound tincture of cardamom, and castor oil at bedtime. Four days later the edema had disappeared. Stevenson's patient was a young married woman who suffered from general edema "for which no cause could be found except the excessive use of salt." Stevenson was told that the whole family [of the patient] was very much addicted to salt eating. He ordered the salt discontinued and the edema disappeared. In the same volume of the *British Medical Journal* (p. 1057) is the report of another case which Dr. Litchfield missed. It is by Midelton, who says that he had a patient with exophthalmic goiter who suffered from excessive edema. He was told that she ate large quantities of salt. This habit he ordered discontinued. After that the edema "lessened greatly." Midelton concludes his report as follows: "Patients who are fond of highly salted food sometimes refuse to give it up. I know of several such who have puffy eyelids and slight edema of the feet, especially at night." And cases such as these are used to help nullify the serious work of scientific men!

The work of Lepine (*Rev. de mêd.*, 1911, xxxi, 744) quoted in the article I am discussing is not a report that has any value in this connection, except in a very roundabout way, for Lepine's conclusion is that while the state of chlorid retention has something to do with hysteric cases, yet the pathogenic action of the chlorid retention is complex and certainly indirect.

Blum, also quoted (*Sem méd.*, Sept. 13, 1913; abstr., The Journal, Oct. 21, 1911, p. 1408), says that many symptoms and disturbances following injections are due to sodium chlorid, and refers to the salt fever of infants. He says it is better to add a little alkali to the salt solutions.

Geyster (*Am. Med.*, 1914, lvii, [N. S. 9]), after urging that normal saline has a wide field of usefulness, says: "It would be strange if a remedy as potent and yet as simple as the normal salt solution should escape indiscriminate and thoughtless use by the inexperienced." He then goes on to tell what he means by that and makes very much the same points in one direction as does Professor Fischer.

Burnett's experiments (*Jour. Biol. Chem.*, 1908, iv, 57) have nothing to do with the case, except to lengthen the bibliography, because he used seawater, and because he used it in enormous doses given in short periods of time. For instance, he gave a 2,200-gm. rabbit 400 c.c. of a one-sixth molecular sea-water in three-fourths of an hour. Beside, he concludes that the magnesium in the sea-water is responsible for the glycosuria which follows its injection.

I shall not continue with these references of Litchfield. I am glad to admit once more that some of the others have a bearing on the problem. *But that is not the point.* The point is that a large proportion of the references quoted by Litchfield have no bearing on the problem, but have for one or another reason been perversely used, and that is not scientifically fair.

Moreover, when the criticisms of a man's work are cited as references against his work, his responses to criticism surely should be used, as, for instance, Fischer's response to the almost ridiculous papers of Moore (The Journal, Oct. 19, 1912, p. 1429), and his response to the unsigned attack by a writer in the *Archives of Internal Medicine.*

As for the "Controverted Theory of Nephritis" (The Journal, June 20, 1914, p. 1971), the title of that editorial was stupid, since the article it quoted had to do with the method of production of the albumin in the urine, that is, with a symptom and not with the basic condition.

Professor Fischer's book did not "calmly disregard all of the work just mentioned," but considered it in the light of his experimental work, discarded most of it so far as applications were concerned, and then proceeded to show to the holders of the older theories that when their patients were about to die from lack of salt and alkali, he could save them

1. *Mandragora autumnalis* is a poisonous, alkaloid-bearing member of the nightshade family (*Solanaceae*) and is a close relative of belladonna. It was prized by the ancients in the belief that it would cure barrenness, but has never been employed as a cathartic. *Podophyllum peltatum* is a native of America, belongs to the barberry family (*Berberidaceae*) and contains no alkaloids. Although its cathartic properties have been known by the American Indians from prehistoric times the plant was not described by botanists until 1731 (Catesby: Natural History of Carolina, Florida and the Bahama Islands, 1731, i, 24), consequently it could not have been known to the writers of the Bible.

by using a newer method. In other words, his theory *works* in properly selected cases. And all he has done has been to pass the so-called authorities, when he found that what they said was not true.

Professor Fischer, and all really scientific research workers, will welcome criticism if it be fair. He was the first to suggest that not all that he believed might be true (THE JOURNAL, Sept. 5, 1908, p. 830). But he should not be burdened by the prejudice which accompanies and follows authority.

The burden of proof is on those of the opposition, and it will take much time and experimentation to successfully balance the work that has been done while they were talking. Many of them will have to learn the new language, which is slowly but surely replacing the antique dialects of medicine, before they can hope to even understand what is being talked about.

In conclusion, it is pleasant to add that Professor Fischer was one of the workers who have been instrumental in showing why glucose is valuable and on what its action in certain types of acidosis depends (*Science*, 1913, xxxviii, 486). It is to be hoped that no one will discontinue its use on this account. PAUL G. WOOLLEY, M.D., Cincinnati.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted on request.

SEALING OF MUSEUM JARS—PREVENTION OF MOLDS IN KAISERLING SOLUTION

To the Editor:—1. Please give me a satisfactory formula for sealing museum jars.

2. Also, some manner, or change in method, which will guard against the growth of molds in Kaiserling solution.

HERBERT V. L. SAPPER, Norman, Okla.

ANSWER.—1. It is the opinion of several authorities, to whom this question has been referred, that those jars with metallic lid clamps and jars having ground stoppers are adequate for the purpose. Sealing is unnecessary as it often becomes essential to change the fluid on the specimens, a difficult process when the jars are sealed. In some places the use of museum jars, except in cases of very large specimens, has been abandoned. Reference may be made to an improved method of mounting specimens on watch glasses (Day, L. E.: Improved Method of Mounting Museum Specimens, *American Veterinary Review*, October, 1913, p. 66).

2. It has been found that the addition of a few crystals of thymol to the Kaiserling solution, at the time of making, is a good preventive against the growth of molds. About 1 gm. of thymol to a gallon of fluid is sufficient. Another precautionary measure is boiling of the solution just previous to its use.

ROSS JONES AND NOGUCHI BUTYRIC ACID TESTS

To the Editor:—1. Are the Ross Jones test and the Noguchi butyric acid test reliable in determining the diagnosis of syphilis?

2. How do these tests compare with the Wassermann test?

F. S. WHITE, M.D., San Antonio, Tex.

ANSWER.—1. The Ross Jones test and the Noguchi butyric acid test are not specific tests for syphilis, but indicate simply an increase in the amount of protein in the cerebrospinal fluid.

2. These tests, when positive, are not of as great significance as the Wassermann test, that is, they do not certainly indicate syphilis.

The Summer Question.—Summer brings baby problems. Babies live in a different world than adults and sudden changes in food, excessive heat and other shocks to their vibrating vitality may easily swing the pendulum to the danger side. A baby is a living "factory" of possibilities and we should see that it is a business necessity to keep his "works" at the utmost efficiency.—*Bull. Chicago School Sanit. Instr.*

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ALBERTA: Edmonton, September 15. Registrar, Dr. Cecil E. Race, University of Alberta, Edmonton.

IOWA: Des Moines, September 10-12. Sec., Dr. Guilford H. Sumner, Capitol Bldg., Des Moines.

NEW YORK: September 22-25. Chief of Examination Division, Mr. Harlan H. Horner, Department of Education, Albany.

Arkansas Homeopathic May Report

Dr. Scott C. Runnels, secretary of the Homeopathic State Medical Board of Arkansas, reports the oral, practical and written examination held at Little Rock, May 27-29, 1914. The number of subjects examined in was 12; total number of questions asked 120; percentage required to pass was 75. The total number of candidates examined was 8, all of whom passed. Two candidates were licensed through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Kansas City Hahnemann Medical College (1912)	(1914)	77, 82.2, 83.1, 85.4, 87.5, 91.7, 95.4.

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Georgetown University School of Medicine	(1891)	New York
Cleveland Homeopathic Medical College	(1904)	Ohio

The following questions were asked:

ANATOMY

1. Define anatomy. 2. How many bones in the upper extremities? Name them. 3. Name the branches given off the arch of the aorta. Where is the innominate artery and what are its divisions? Name the branches of the external carotid. 4. Name the divisions of the digestive tract, and describe the duodenum. 5. Where is Scarpa's triangle? Give its boundaries and name the important structures contained therein. 6. Give the origin and insertion of five muscles. 7. Name the cranial nerves and give their distribution. 8. Give the blood-supply of five organs of the body. 9. Locate and describe a femoral hernia and give its coverings, beginning at the surface. 10. Give the fetal circulation.

PHYSIOLOGY

1. Give the composition, reaction and uses of blood. 2. Name the secretions of the alimentary canal, their reaction and functions. 3. What is the physiologic function of the liver? 4. Describe urea, its occurrences, variations in the quantity excreted and recognition in the voided urine. 5. What is the function of the first cranial nerve?

CHEMISTRY

1. Give the chemical name and formula of (*a*) common table-salt, (*b*) marble, (*c*) plaster of Paris, (*d*) borax, (*e*) blue vitriol, (*f*) soot, (*g*) vinegar, (*h*) verdigris, (*i*) tartar emetic, (*j*) sugar of lead. 2. Define (*a*) base, (*b*) acid, (*c*) salt; give examples. 3. Name ten elements used in their pure state in medicine. 4. Write the equation of the reaction when pure wood alcohol is burned; (*b*) when corrosive sublimate and potassium iodid meet in solution. 5. What is meant by (*a*) hard water, (*b*) soft water? (*c*) how may hard water be made soft? (*d*) What does the presence of an abnormal amount of chlorin in water indicate? (*e*) How would you determine its presence? 6. Name five substances used as antiseptics or disinfectants and give their chemical formula. 7. What is grain alcohol? Give formula. Name some substances from which it is derived; describe the process of preparation; name some contaminations and give mode of determination. 8. Give three tests for sugar in urine. 9. Give five tests for albumin in urine. 10. Give composition of human milk.

PATHOLOGY

1. What diseases of the mother may be transmitted to the fetus? 2. Define anemia, hyperemia and leukemia and give examples of the cause of each. 3. Difference between congestion and inflammation. 4. How does sarcoma differ from carcinoma? 5. What determines the benign or malignant character of a new growth? 6. Describe the etiology of malaria. 7. Give pathology of different forms of pleurisy. 8. What diseases are attended with ulceration of the intestines? 9. Describe changes in cirrhosis of the liver. 10. Distinguish between hematuria and hemoglobinuria; causes of each.

BACTERIOLOGY

1. Define following terms: coccus, bacillus, spirillum, obligative anaerobe, facultative anaerobe and give examples of each. 2. Name the organisms commonly found in (*a*) furunculosis, (*b*) tonsillitis. 3. Define germicide, antisepsis, asepsis, sterile and disinfectant. 4. Define parasite, saprophyte, spore, flagellum, mycelium. 5. Name five culture-mediums. 6. Name pathogenic organisms having exogenous toxins. 7. Give dif-

ferential characteristics of organism causing (*a*) diphtheria; (*b*) tuberculosis. 8. Name ten diseases caused by specific organisms. 9. Name ten diseases caused by organisms but not specific. 10. Give brief outline of (*a*) Widal test; (*b*) Wassermann.

HYGIENE

1. Mention five preventable diseases. 2. (*a*) Mention five satisfactory disinfectants and give indications for their uses. (*b*) What gases are most efficient as disinfectants? 3. (*a*) How can malarial districts be made healthy? (*b*) How can *Anchylostoma duodenale* districts be made healthy? 4. Describe in detail the sanitary precautions necessary in typhoid fever. 5. Describe the agency of the ptomains in inducing disease, and the disorders produced by them.

DIAGNOSIS AND PRACTICE

1. Give differential diagnosis of pneumonia, bronchitis, pleuritis. 2. Give treatment of pneumonia, including indications for three remedies. 3. Give etiology, symptoms and treatment of pericarditis. 4. Define gastritis. Give diagnostic indications. Outline treatment. 5. Describe typical typhoid fever to a fatal termination. 6. What is cerebral anemia? What is cerebral hyperemia? Differentiate. 7. Give cause, symptoms and terminations of poliomyelitis anterior. 8. Measles: Describe a case and give differential diagnosis from scarlatina. 9. Give differential diagnosis of variola and varicella. 10. What is malaria? Describe, briefly, different types of malaria, and give clinical diagnosis between continuous type and typhoid fever.

MATERIA MEDICA

1. Apis mellifica: Give method of preparation of this remedy, and give two characteristic symptoms. 2. Belladonna: Give the common name of this drug. Give the brain symptoms indicating its administration. Name the alkaloids of belladonna. 3. Conium maculatum: Give characteristic symptoms calling for its use in disease of the urinary organs. 4. Ipecacuanha: Give symptoms calling for this remedy in disease of the digestive tract. 5. Give characteristic symptoms of lachesis. 6. Opium: Name two alkaloids and give their physiologic action. 7. Podophyllum peltatum: Give the aggravations and ameliorations indicating administration of this remedy. 8. Rhus toxicodendron: Give the characteristic symptoms of this drug. 9. Sulphur: What are the general indications for this remedy? 10. Veratrum viride: Give the abdominal symptoms calling for the administration of this remedy.

THERAPEUTICS

1. Give indications for chamomilla, mercurius vivus and arum triph. in stomatitis. 2. Differentiate acute catarrhal laryngitis, croupus laryngitis and diphtheria, and outline treatment for diphtheria. 3. Differentiate indications for aconite, bryonia and kali carb. in pericarditis. 4. Give etiology and symptoms of chronic nephritis; mention three leading remedies and give definite indications for each. 5. Differentiate enterocolitis and dysentery. Briefly outline general treatment and name at least two remedies in each case. Give distinct indications. 6. Outline general management of a case of pneumonia, in an adult. Name several remedies, giving indications briefly. 7. Give indications for Aethusa cynapium, bismuth and ipecac in vomiting. 8. In treatment of la grippe give indications for Rhus. tox., Eupatorium perf. and pyrogen. 9. Differentiate indications for Kali bich., Nux muschata and pulsatilla in stomach disorder. 10. What is erysipelas? Outline treatment.

SURGERY

1. Patient in state of coma, what might it be? Give differential diagnosis. 2. Give ten methods of controlling hemorrhage. 3. Give five methods of anesthesia and their contra-indications. 4. Reset a dislocated inferior maxilla. 5. Name the dislocations of the shoulder-joint. 6. Mention ten varieties of fracture of a long bone. 7. State most common seat of fractures of the clavicle; give treatment. 8. Differential diagnosis of appendicitis and renal colic. 9. Describe four varieties of club-foot. 10. What is Colles' fracture; Pott's fracture?

OBSTETRICS

1. Give brief description of female pelvic anatomy. Name diameters. 2. Give diagnostic points and methods of determining early pregnancy. 3. Give general outline of attention necessary during the puerperal period. 4. Name several of the disorders incident to the period of pregnancy. Give treatment indicated. 5. Give varieties of placenta praevia and treatment. 6. Give etiology of antepartum hemorrhage and treatment. 7. What is third stage of labor? Give management. 8. Give management of breech presentation. 9. Name several complications incident before labor. 10. From beginning of labor until flow of milk is established, what conditions might be met that would definitely indicate pulsatilla, aconite, secole cor., ipecac and phytolacca. Briefly outline indications.

GYNECOLOGY

1. Differentiate simple from gonorrheal vaginitis and give treatment for each. 2. Give causes and treatment of ovaritis, acute and chronic. 3. Define metrorrhagia. (*b*) Name two of its most common causes prior to the menopause. (*c*) What would you suspect should it occur subsequent to the same? (*d*) How would you verify your suspicions? 4. Give symptoms, diagnosis and treatment for chronic endometritis. 5. What are the nervous manifestations of amenorrhea? 6. Give etiology and treatment of salpingitis. 7. Give symptoms and treatment of retroversion of the uterus. 8. Name the uses of the uterine sound. Enumerate contra-indications and dangers attending its use. 9. Give etiology, symptoms and treatment of pelvis cellulitis. 10. Describe the pathologic effects caused by lacerations of cervix and give all reflex disturbances therefrom.

Book Notices

DIGEST OF COMMENTS ON THE PHARMACOPEIA OF THE UNITED STATES OF AMERICA (EIGHTH DECENNIAL REVISION) AND ON THE NATIONAL FORMULARY (THIRD EDITION) for the Calendar Year Ending Dec. 31, 1912. By Murray Galt Motter and Martin I. Wilbert. Paper. Pp. 495. Hygienic Laboratory Bulletin No. 93. Washington: Government Printing Office, 1914.

The preface announces that this, the eighth bulletin of the present series, rounds out three decades of the systematic compilation of comments and criticisms on the Pharmacopeia of the United States. The original publications were based on the sixth edition of the Pharmacopeia, which was published at the close of the year 1882, and the digests have been continued more or less regularly since that time. The material included in the present bulletin has been arranged with a view of conserving space, and despite the fact that it appears to include more references than any of the former publications, the number of pages has been materially reduced. The bulletin is aptly defined by the compilers as an elaborated index of current literature relating to pharmacopeial articles, and from this point of view should be of value to all physicians who are in any way interested in the progress or development of drug therapy. The number and the nature of the comments on the German Pharmacopeia that are quoted indicate a real live interest on the part of the physicians as well as pharmacists of that country in the composition and possible uses of the Pharmacopeia, and should be an incentive to the professional men in this country to emulate. Among the more interesting compilations found in this volume is a table showing the highest and lowest maximum, single and daily doses of widely used potent drugs and preparations included in the maximum dose tables of the several pharmacopeias. The figures given in this table indicate that even with articles that are more or less uniform, so far as the purity and strength of the preparations are concerned, there is nevertheless a marked variation in the amount of drug that is considered harmful in different countries. Current discussions on international uniformity in the standards, requirements and tests for widely used or potent medicaments and the desirability of restricting the scope of the Pharmacopeia to really useful drugs and preparations reflect rather a live interest in these vitally important features of pharmacopeial development. These discussions also appear to indicate an earnest desire to provide for future medical students a safe and sane foundation of knowledge regarding materia medica subjects. The quotations from published reports of officials entrusted with the enforcement of laws relating to the production and sale of drugs indicate that much of the material that is now being sold as medicine is either directly harmful or absolutely useless and that greater care and activity is needed on the part of all concerned to secure reasonable uniformity and purity in the medicines dispensed to patients.

ORGANIC CHEMISTRY FOR STUDENTS OF MEDICINE. By James Walker, LL.D., F.R.S., Professor of Chemistry, University of Edinburgh. Cloth. Price, 6 shillings. Pp. 328. London: Gurney & Jackson, 1913.

The name of James Walker occupies an enviable position in the realm of physical chemistry. Perhaps no other elementary text-book on this subject has been so well received by teachers as that of Walker's, and this speaks all the more for the author, because all recognize the difficult task of presenting the physical side of chemistry in a suitable manner, and yet in a suitably sized text-book. It was a matter of some surprise to note that Walker has recently written a book covering an entirely different field; in fact, he so restricted the name of his text that probably he could have selected no other subject which so thoroughly excludes physical chemistry. Nevertheless, in view of the ability shown in his previous works an equally good and serviceable book might have been expected, but anticipations have not been realized. The book, as the name suggests, is written primarily for the benefit of the medical student who is taking his first course in organic chemistry; but it cannot be recom-

mended as a text especially adapted for medical students, or any other kind; in fact, it is believed that there are many other organic chemistry texts that more nearly approach the demand of an American school. The subject-matter is presented in a rather uninteresting and monotonous manner, while in a few places the English is such as to be quite confusing. Although the book is recent, it cannot be termed "modern." For example, bivalent carbon, a plausible explanation for the poisonous effects of cyanids and carbon monoxid, is not brought forth; no attempt is made to explain molecular rearrangements, a subject with which every student must later come into contact in physiologic chemistry, and very little insight is given concerning the mechanism of reactions, which rather detracts from the book. References are not given, and in certain instances, names which usually are correlated with certain reactions are omitted. Typographic errors occur in a few places, as the formula for metaphosphoric acid (p. 29) and picric acid (p. 183). A few physical data are incorrect, as in the case of the melting-point of pure formic acid.

A matter of great concern to the American teacher in a medical school is the consideration of proprietary medicines. In this book, the proprietary names of medicines are emphasized instead of the clinical names which reveal their actual constitution, and thus the medical student who uses the book is liable to prescribe names rather than drugs. Urotropin, for instance, is clearly brought forth, while hexamethylenamin, the official name is relegated to the background.

TEXT-BOOK OF LOCAL ANESTHESIA FOR STUDENTS AND PRACTITIONERS. By Prof. Georg Hirschel, I Assistant in the Surgical Clinic, Heidelberg. With an Introductory Preface by Prof. Dr. Wilms. Translated by Ronald E. S. Krohn, M.D. Cloth. Price, $2.75 net. Pp. 181, with 103 illustrations. New York: William Wood & Co., 1914.

The practice of local anesthesia which has received such extended application in recent years resolves itself into a knowledge of a few anesthetic substances and a minute and exact knowledge of the distribution of the nerves and the technic by which nerve-trunks can be made accessible. For the obtunding agent Hirschel chooses only novocain combined with an epinephrin preparation. Morphin is recommended as a preliminary injection, occasionally to be accompanied by scopolamin. The discussion of remedies, instruments and injection technic is brief, occupying less than ten pages, while the remainder of the book is taken up with the description of the methods of applying anesthesia to the various regions of the body. The descriptions are elucidated by a number of excellent plates showing anatomic relations. The poorly developed state of local anesthesia of the female genital tract is indicated by the little attention given to this phase of the subject. The work may be characterized as quite conservative, presenting no method that has not been well worked out. The application seems to be made wholly to operative work, for although the use of local anesthesia for the relief of pain in laryngeal tuberculosis and obstinate neuralgia is applied on the same anatomic principles, these important developments receive no notice. As a guide to the practice of local anesthesia previous to operation, the work will easily take first rank. The translation is excellent and the value of the work has been enhanced by the addition of an index.

PRACTICAL THERAPEUTICS. Including Materia Medica and Prescription Writing, with a Description of the Most Important New and Nonofficial Remedies passed on by the Council of Pharmacy and Chemistry of the American Medical Association. By Daniel M. Hoyt, M.D., Assistant Physician to the Philadelphia General Hospital. Second Edition. Cloth. Price, $5. Pp. 426, with illustrations. St. Louis: C. V. Mosby Company, 1914.

While this is not an exhaustive work on pharmacology, it is constructed on such a practical basis as to give it good reason to claim to be a useful one. It aims to found the indications for drugs on their physiologic action, which is explained clearly and briefly. The classification is made according to the principal purpose for which the drug is employed, and the chief space is given to those agents which are likely to be most used by the physician. This discussion of medicinal agents, together with a chapter on proprietary medicines and dispensing, constitutes the book proper. This book may perhaps be accorded the honor of being one of the first, if not the first, to deal with the patent medicine evil in a separate chapter as of importance to the physician who is to prescribe drugs. The page given to the subject of dispensing is quite inadequate. A fuller discussion of this subject, which is also of great importance to a large class of physicians, would have been very desirable. The rest of the book consists of an appendix which is nearly as large as the body of the work and may even overshadow it in importance. It contains an authorized reprint of the greater part of New and Nonofficial Remedies for 1913, and a bibliography which is singularly brief and certainly much fuller on some subjects than on others. Thus "Benzol in Leukemia" has twenty references while "Emetin in Amebic Dysentery" has only one. Such a bibliography can be of little value to student or teacher. An index of drugs follows which gives briefly the properties of the official drugs with reference to the page of the book where each is discussed. The book throughout follows the unusual custom of printing both terms of the ingredients of prescriptions with initial capitals; thus, Acid. Boric. Carelessness in the use of Latin endings and in the printing of prescriptions is one of the minor blemishes of the work. Despite these criticisms, we repeat that the author has produced a useful work which ought to have its share in the coming regeneration of therapeutics.

TWELFTH ANNUAL REPORT OF THE BUREAU OF SCIENCE, PHILIPPINE ISLANDS. Paper. 1913.

This handsomely printed report of 130 pages, exclusive of the abundant plates and other illustrations, gives only a brief sketch of the tremendous activities of the bureau and its energetic personnel. It is a splendid record of the practical application of scientific study to the health and material welfare of a tropical country in which the problems and the opportunities are both on a tremendous scale of bigness. It is hardly possible to take the space even to enumerate the varied lines of work in which the bureau has been engaged for the past year, but they range from intensive studies of plague, cholera and dysentery and their bacteriology, description and classification of the flora and fauna of the islands, etc., to the fisheries, the making of cement, lime and sugar, and research work in the discovery of new products useful in science and the arts, etc. The report is accompanied by a booklet, made up largely from the information contained in the report, indicating the possibilities of legitimate industry and commercial exploitation in the islands.

SURGERY: ITS PRINCIPLES AND PRACTICE FOR STUDENTS AND PRACTITIONERS. By Astley Paston Cooper Ashhurst, A.B., M.D., F.A.C.S., Instructor in Surgery in the University of Pennsylvania. Cloth. Price, $6. Pp. 1141, with 1039 illustrations. Philadelphia: Lea & Febiger, 1914.

The impression gained on a reading of this book is one of conservatism and practicability. Both bespeak the good judgment of the author, which is a comforting quality to the student or practitioner who depends on a text-book in any branch as a guide to study or for reference in his daily work. The principles of surgery are well and clearly laid down, and the diseases, accidents, operations and procedures which come largely within the skill and experience of the practitioner who does surgery are given a gratifying amount of attention, with concise but ample description. The more formidable surgical problems requiring the highest technic and knowledge are not neglected, but more details would perhaps be desired by many before attempting such work. Military surgery, the treatment of accidents and the suture of vessels and nerves are subjects detailed in a most satisfactory manner. In regard to fractures the author displays the conservatism taught by experience, no doubt, and early motion, massage and the open treatment are to be employed only with the greatest caution and in exceptional instances. The section on the arthritides is informing and practical. The special branches, orthopedics, gynecology, genito-urinary

surgery and the eye, ear, nose and throat have been treated only so far as they come within the province of the general surgeon. The illustrations, mostly from photographs, are abundant and appropriate to illustrate the text, and the book mechanically is well made.

THE HYPODERMIC SYRINGE. By George L. Servoss, M.D. Cloth. Price, $2. Pp. 317. Newark, N. J.: Physicians Drug News Company, 1914.

The author has succeeded in producing a good-sized book on a small but important subject. In the short space of twenty pages, he has treated of the syringe and its uses. In enumerating the remedies employed by this method, the general class of bacterins obtains an entrance and the fable of the camel's nose is repeated. The bacterins drag in the subject of the etiology, pathology and treatment of infectious diseases, which occupy the remaining 300 pages, so that we have not merely a book on hypodermic medication but a compilation on the practice of medicine. A study of the structure of the book reveals some interesting facts. While the book is published by an independent firm, it is quite evident that the influence of a prominent manufacturer of serums and bacterins has determined its contents. The author has quoted freely, but a large part of his quotations are from "Working Bulletins" Nos. 1, 8, etc. There appears to be no editorial summarization of these varying statements, and the date of the material is different for the different preparations; for instance, on antidysenteric serum there is scarcely a reference to anything since 1902, while the section on antimeningitic serum refers to the recent epidemic in Texas in 1912, this bringing the article fairly well up to date. Naturally a book discussing the use of these remedies in the broad field of infectious diseases would require more thorough study than can be afforded by the mere clipping of quotations and statistics from various authorities. Such a book to be valuable must be the work of one fully equipped with theoretic knowledge and practical experience.

DIE NASEN-, RACHEN- UND OHRERKRANKUNGEN DES KINDES IN DER TAEGLICHEN PRAXIS. Von Professor Dr. F. Göppert, Direktor der Universitäts-Kinderklinik zu Göttingen. Spezieller Teil, Enzyklopaedie der klinischen Medizin. Herausgegeben von L. Langstein, C. von Noorden and others. Paper. Price, 9 marks. Pp. 169, with 21 illustrations. Berlin: Julius Springer, 1914.

This small volume on the diseases of the nose, throat and ear in children is a special part of the "Enzyklopädie der klinischen Medizin." The subject-matter is divided into three parts, the first of which embraces the inflammatory diseases of the nose and nasopharynx, especially in their relation to the general system. The second part considers the independent local diseases of the nose and throat, while the third is devoted to the diseases of the middle ear and their results. It is a valuable contribution, especially in regard to the diagnosis and treatment of these conditions in infants, as too little attention in general is paid to these young patients. Of chief interest is the emphasis laid on the interrelationship of the local conditions with diseases that are constitutional in their nature.

ESSENTIALS IN BACTERIOLOGY. Being a Concise and Systematic Introduction to the Study of Bacteria and Allied Microorganisms. By M. V. Ball, M.D., Assisted by Paul G. Weston, M.D., Pathologist State Hospital for Insane at Warren, Pa. Saunders' Question Compend. Seventh Edition. Cloth. Price, $1 net. Pp. 321, with 118 illustrations. Philadelphia: W. B. Saunders Company, 1913.

The author and editor of this little book propose an attempt "to reflect as faithfully as possible the present status of bacteriology without overstepping the limits set by the scope of a book intended primarily as an aid to students." The scope of the work and want of space have not permitted the consideration of theories and obsolete methods. Part 1 consists of chapters on general biologic considerations and technic of staining, culture, animal experiments, etc.; Part 2 of chapters on the special bacteriology of non-pathogenic and pathogenic bacteria. The appendix takes up yeasts, oidiums, molds, etc. A table at the end, arranged alphabetically by names of species, gives the chief characteristics of the principal bacteria, pathogenic and non-pathogenic.

Miscellany

Suicides and Newspaper Publicity

The probable influence of newspaper publicity of details regarding the nature and kind of substances used in connection with accidental or intentional poisoning is well shown by a compilation from the reports of the coroner of St. Louis for the years 1910 to 1914, inclusive.

The annual period covered by the latest report, April 1, 1913, to March 31, 1914, includes the time during which much unwarranted and in many respects misleading publicity was given to cases of bichlorid poisoning in the newspapers, and the comparative number of cases of poisoning by this agent in St. Louis is suggestive at least of the results that might have been expected. While in a general way the total number of cases of suicide by poisoning in 1913-1914 is comparable with the number occurring in previous years, there is a very marked increase in the number of cases due to the ingestion of mercuric chlorid.

The evident reduction in the number of cases of accidental poisoning from all causes leads one to suspect that newspaper publicity has had in this respect a beneficial influence in that it probably served to call attention to the desirability of safeguarding poisons in such a way that they could not readily be mistaken for other more or less harmless substances. The total absence from the reports for 1913-1914 of accidental cases of poisoning by mercuric chlorid also serves to discount the recent almost hysteric demand for special legislation to protect innocent persons from this deadly poison.

If any further argument were needed to induce newspapers to heed the frequently made request that they omit all mention of the details by which self-destruction was accomplished, it is shown by the accompanying compilation.

SUICIDE BY POISONING

	1910	1911	1912	1913	1914	Total
Arsenic	1	2	3	3	4	13
Mercuric chlorid	1	1	4	3	12	21
Phenol (carbolic acid)	81	85	120	119	85	490
Potassium cyanid	3	5	1	3	7	19
Chloroform	2	..	3	1	2	8
Carbon monoxid	13	22	10	27	23	95
Cocain	1	..	..	..	..	1
Formaldehyd	..	..	..	..	1	1
Hydrocyanic acid	2	2	1	1	3	9
Laudanum	1	..	1	1	..	3
Morphin	2	1	..	1	4	8
Muriatic acid	..	..	2	..	3	5
Opium	..	..	..	1	..	1
Oxalic Acid	1	..	3	..	..	4
Phosphorus	2	1	..	..	..	3
Strychnin	1	1	1	1	2	6
Sulphuric acid	..	..	..	1	..	1
Wood alcohol	1	1	1	1	..	4
	112	121	150	163	146	692

ACCIDENTAL POISONING

	1910	1911	1912	1913	1914	Total
Arsenic	1	..	..	..	1	2
Mercuric chlorid	..	1	1	1	..	3
Bromidia	..	..	..	..	1	1
Phenol	7	5	2	1	1	16
Potassium cyanid	..	..	..	1	..	1
Chloroform	2	1	1	..	..	4
Carbon monoxid	12	10	14	14	3	53
Chloral hydrate	..	..	..	..	1	1
Cocain	..	..	1	..	2	3
Hydrocyanic acid	..	..	..	1	..	1
Laudanum	1	..	..	..	..	1
Morphin	1	1	1	2	..	5
Opium	..	..	1	..	1	2
Oil of Cedar	..	..	..	1	..	1
Ptomain	..	..	..	4	..	4
Picrotoxin	..	..	..	..	1	1
Strychnin	..	..	1	1	1	3
Sodium nitrate	1	..	..	1	..	2
	25	18	22	27	12	104

The figures given also suggest the desirability of telling the truth in regard to the action of corrosive poisons and the need for refraining from even an intimation that the use of any one poison or substance may lead to a sure and painless death.

In this connection it has been frequently pointed out that mentally unbalanced persons who in a fit of despondency might inflict on themselves serious damage would be likely

to be restrained by the dread of the unknown agony they may suffer from an attempt to do so, and because of this fact it cannot be too frequently emphasized that there are few modes of suicide more painful than death by means of any one of the many corrosive poisons that have been used in the past.

It might also be stated that only a limited number of the attempts at suicide by means of poisons are actually fatal and that in the majority of cases the ingestion of a poison leads to a painful, long drawn out convalescence and may, as in the case of bichlorid poisoning, involve permanent damage to vital organs, such as the kidneys, and thus materially influence the health and well-being of the individual for years to come.

Making Application of Available Knowledge

In an inaugural lecture on "The Necessity for the Practical Application of Available Knowledge," delivered before the class of the Veterinary Institute of the University of Melbourne in March, Dr. James W. Barrett cites two interesting points to illustrate his thesis. They concern infant mortality and the low standard of health of Australian women. Barrett says it is well ascertained in all countries that when the mean temperature of the air rises to 60 F., artificially-fed babies begin to die and that the death-rate, particularly in the first year, is high because of our failure to apply principles well known in prevention.

That the deaths are preventable in large part he asserts is proved by the experience of New Zealand, where the death-rate among infants in 1912 was about 51 per thousand as compared with 68 in Australia, 232 in Russia, 170 in the German Empire (1909) and 107 in the United Kingdom (1909). For the cities the comparison is still more striking, the rate in 1910 in St. Petersburg and Moscow being 280, Berlin 155 and London 103, while the rate in various Australian cities runs from 81 to 77, reaching the lowest point at Dunedin, New Zealand, where the rate was 38. The reduction in the death-rate in infants in New Zealand has been chiefly in gastro-enteritis, as is shown by the percentages of deaths from this cause, which in 1908 was 23.74, with a rapid reduction to 12.63 in 1912. While part of this reduction may be due to improvement in the milk-supply of New Zealand cities which, however, Barrett says is no better than that of Australian cities, or to the operation of the midwives act and the establishment of maternity homes, he believes it is due chiefly to "special and practical education."

In 1907 the Society for the Health of Women and Children was founded in New Zealand by Dr. Truby King, with the object of caring for the infant before birth and during the period of infancy by practical eugenics; to rear a strong and healthy race by constructive and not by restrictive means, and not to eliminate the unfit, but to prevent their production by aiding in the full development of the healthy. With the encouragement and assistance of Governor and Lady Plunkett, who appealed for assistance to the people, nurses were trained in the best methods of feeding and care of infants and sent throughout New Zealand to educate the women in the principles of child care and especially to urge breast-feeding. There are now twenty-seven of these "Plunkett nurses" and the cost is about $20,000 a year, more than half of which is met by the government. The result, as Barrett says, has been achieved by applying scientific principles in the home.

On the second point, Barrett calls attention to the fact that while the general death-rate in Victoria (11.52 per thousand) and Queensland (10.65 per thousand) is low, it is notorious that the appearance of the women is not satisfactory. The men appear to enjoy excellent health, but in many instances the women appear anemic, neurasthenic and worn. This is commonly ascribed to the tropical climate, but this does not account for the health enjoyed by the men and the general low death-rate. The explanation Barrett finds in physiologic conditions and the wet-bulb temperature. Haldane has shown that work is rendered impossible in a wet-bulb temperature of from 90 to 91 F., and that in a wet-bulb temperature over 78 F. a great deal of work could not be done with comfort. This applies whether the wet-bulb temperature is produced by a high dry-bulb and a low percentage of moisture, or by complete saturation with low dry-bulb. A plotting of the wet-bulb isotherms for Australia shows that it has a temperature below 70 F. wet-bulb in winter, and the greater part of it is below 75 F. wet-bulb in summer. Barrett says that this fact accounts for the good health enjoyed by the inhabitants in general and the low death-rate. It does not, however, account for the defective health of the women, which Barrett attributes in part at least to the high wet-bulb temperature of the kitchens and houses, as ascertained by actual tests in a number of cities and towns, a condition which should be easily remedied by the application of scientific knowledge at hand.

The whole fabric of modern curative medicine, Barrett believes, approaches the ridiculous because well-known scientific principles of prevention are not applied. He takes the view that it is more important to apply knowledge already existing than to seek for further knowledge, and that it is futile to enlarge the boundaries of knowledge by recondite research if no attempt is made to put the knowledge we have to practical use.

The Short Road to Success

We have, at various times, commented on the foreign opinion of American physicians and the brazen effrontery with which it is attempted to foist proprietary preparations on American physicians. More recently space has been given to a discussion of the so-called "painless childbirth" method of Freiburg, now being exploited by an American magazine. In view of this situation, the following comment by an American medical journal (the *Cleveland Medical Journal*) seems exceedingly appropriate:

"With the recent acknowledgment from *McClure's Magazine* (THE JOURNAL A. M. A., June 13, 1914, p. 1912) that their article, "Painless Childbirth," was technically correct and read by Professor Krönig and Doctor Gauss, we feel tempted, along with others, to lament the changes coming over many of the German medical men of to-day. The old German ideals of deep study, of verity and of thoroughness —what, may we ask, is becoming of them? Much of the German medical literature of to-day is flooded with superficial studies and absurd deductions on this, that and the other subject intended to attract the public eye. At Berlin and Vienna are arranged elaborate postgraduate courses of from one to four weeks or longer, principally shorter. They are ground out to your order, in English or German, at so many "simoleons" per minute and at the end, a much embossed, much begilded diploma will be duly handed out to the participant. We are glad to say that this does not apply to the work of many of the worthy professors in these great founts of medical knowledge, but sad to relate it is only too true of many of the courses offered. And what is even worse, Americans are the particular game and laughing stock of all too many of those privat-dozents, ausserordentlich professors, geheimrats, et cetera. American medicine has not yet recovered from the shock of Friedmann's Golden Fraud and we are pained to learn that Professor Krönig would also add his name to those men desiring dollars rather than wisdom and the honor of their fellow workers. We say this in spite of the recent denial from him as given in the *Lancet Clinic*. The German medical man has but to put a few titles before his name, appear in America and he feels himself called upon to burst out in public print to his heart's desire and his pockets overflowing—witness the example of a noted orthopedist a few years ago and just lately of an aurist. It is said that our remarkable antisyphilitic remedy, salvarsan, costs nine marks (about two dollars) a kilogram to manufacture and is sold to the public at the *moderate* price of nine thousand marks (about two thousand dollars) per kilogram. True, it is also said, that all the profits are turned over to the institute at Frankfort; but what, might we ask, would happen if the Rockefeller or Pasteur Institute should adopt such tactics with so valuable a remedy? Think of the hundreds and hundreds of dispensary patients denied this drug because of its prohibitive cost. Is it possible that the German med-

ical man of to-day is, in his desire for material gain, forgetting the higher ideals of research, of teaching others and of healing the sick? There is much food for thought for his American colleagues and we deeply hope that medical Germany will take no chance to besmirch that high reputation of which she can be so justly proud."

Cleansing and Disinfection of Railroad Coaches

The usual carelessness of the traveling public and the close contact necessitated in railroad travel make the sanitation of railroad coaches an important problem in disease prevention. The railroads entering Asheville, N. C., a resort containing many sanatoriums for the care of tuberculous persons, have a method of disinfecting and cleaning their sleeping-cars and day coaches and their contents which is well devised and seems to be good enough to serve as a model. The procedure is described by A. D. Foster in *Public Health Reports*, March 27, 1914. Asheville is a division terminus and cars entering that place lie over for twelve hours, during which they are cleaned and disinfected. Sleeping-cars, day coaches and baggage-cars are switched to a special track, where the ventilators, windows and doors are tightly closed and the cars are fumigated with formaldehyd gas. The gas is generated in three galvanized iron pails for each car, each pail containing 500 c.c. commercial formaldehyd and 250 gm. potassium permanganate. In sleeping-cars all berths are taken down, and blankets, pillows and mattresses are opened and spread out so that the gas may have access to them. The car remains closed for about twelve hours. All carpets, upholstered seats and backs, blankets and pillows are then removed from the car and placed in the air and sun outside. Dust is removed from the removable seats, backs and carpets by means of compressed air, and similar cleansing of the interior of the car is performed. The floor of the car is then scrubbed with soap and hot water and the remainder of the woodwork is wiped with damp cloths. Drinking-water tanks and spittoons are removed, cleaned and scrubbed inside and out with brush and scouring-soap, rinsed with clean water and then sterilized with live steam. A small quantity of formaldehyd is placed in each spittoon. Once a month the tanks used for storing water for wash-rooms and water-closets are flushed and cleansed, and hoppers are cleansed with an acid solution. Woolen blankets are periodically shipped to special laundries where they are washed and combed. Day coaches and baggage-cars are cleaned and disinfected in practically the same way, and special attention is given to the space behind the steam-pipes which run alongside the coaches, a favorite place for expectoration by passengers. This is scrubbed with hot water and soap and then scalded with live steam. The procedures described seem to be fairly effective methods of cleaning, and much in advance of those usually employed. For the proper protection of the public similar methods might properly be demanded everywhere.

Dual Responsibility of Physicians Connected with State Institutions

The supreme court in Vienna has recently decided that medical men connected with the municipal hospitals are liable for damages from malpractice the same as other practitioners elsewhere, as they are personally responsible for their actions in respect to patients. In their capacity of teachers, however, as professors in municipal and state institutions, they are responsible to the state, and they must be regarded as public officials to this extent. The case in which this decision was handed down was the appeal of a former official who had sued Prof. J. Hochenegg and three of his assistants for damages on account of the consequences of an operation on a furuncle. He asked 2,000 (about $400) kronen and the difference between the salary he formerly received and the pension he was now getting. He lost his case at the first trial as Professor Haberda testified that the operation had been done strictly according to approved rules, and the lawyers pleaded that, in any event, the defendants, being physicians in the public hospital, were thus public officials and the case should be non-suited. The supreme court rejects this legal contention and remands the case for a new trial.

Medicolegal

No Damages for Mental Anguish from Physician's Failure to Attend Wife

(Adams vs. Brosius (Ore.), 139, Pac. R. 729)

The Supreme Court of Oregon affirms a judgment for the defendant, who was sued for $50,000 damages for mental anguish asserted to have been suffered by the plaintiff on account of an alleged breach of contract by the defendant to attend the plaintiff's wife after she had met with an accident which produced a miscarriage. The court says that the doctrine that mental suffering accompanying personal injury or physical pain is always the subject of compensation is so firmly implanted in the jurisprudence of the several states of the Union as to become a legal maxim. In most cases, however, the mental anguish should be connected with the bodily injury and be fairly and reasonably the natural consequence that flows from it, and damages for prospective mental anguish are not recoverable as being too speculative. The sympathetic mental sufferings of the plaintiff on account of the suffering and pain of his wife, caused by the defendant's failure to observe his professional contract, were too remote and inconsequential to be actionable. It is the person who suffers the injuries proximately resulting from the wrong done, and such person alone, who is entitled to compensation, except in cases in which death results and the cause of action is made to survive to relatives, or personal representatives by virtue of the statute. Had death not claimed her for its victim, the plaintiff's wife possibly could have maintained an action against the defendant for the mental anguish and physical pain, if any, which she sustained as a result of the broken contract, but for the plaintiff no action was maintainable for purely mental distress.

Eugenics Law Constitutional

(Peterson vs. Widule (Wis.), 147 N. W. R. 966)

The Supreme Court of Wisconsin holds constitutional the eugenics law passed in that state in 1913. The court says, among other things, that the power of the state to control and regulate by reasonable laws the marriage relation, and to prevent the contracting of marriage by persons afflicted with loathsome or hereditary diseases which are liable either to be transmitted to the spouse or inherited by the offspring, or both, must, on principle, be regarded as undeniable. To state this proposition is to establish it. Society has a right to protect itself from extinction and its members from a fate worse than death.

Neither the legislative idea nor the legislative purpose in the passage of the present law can be a matter of serious doubt. The idea plainly was that transmission of the so-called venereal diseases by newly married men to their innocent wives was a tremendous evil, and the purpose just as plainly was to remedy that evil so far as possible by preventing the marriage of men who on examination were found to possess such diseases.

An argument was made that the law is void because the classification is unreasonable, arbitrary and discriminatory, in that it singles out men about to marry and makes a class of them; there being, as it was argued, no substantial differences which suggest the propriety of different legislative treatment between men who are about to marry and women who are about to marry. Theoretically the argument is strong. Women who marry and transmit a loathsome disease to their husbands do just as much harm as men who transmit such a disease to their wives; if women were in fact doing this thing as frequently or anywhere nearly as frequently as men, the argument could hardly be met. The medical evidence in the case, however, corroborates what the court supposes to be common knowledge, namely, that the great majority of women who marry are pure, while a considerable percentage of men have had illicit sexual relations before marriage, and consequently that the number of cases in

which newly married men transmit a venereal disease to their wives is vastly greater than the number of cases in which women transmit the disease to their newly married husbands. It follows that legislation directed against males alone for the purpose of preventing the transmission of venereal diseases is clearly within the police power and just as clearly is not discriminatory.

The court deems it clear that the act as passed was intended to cover only acquired venereal diseases as understood in medical science, and that the form of physician's certificate in the act is to be construed as covering only such diseases.

The act requires physical examination and "the application of the recognized clinical and laboratory tests of scientific search." It seems quite impossible to believe that it was seriously expected that the Wassermann test was to be considered a sine qua non. The court prefers to construe the words "recognized tests" as intended to refer to the tests recognized and used by the people who were to make them. This construction sustains the law, makes it reasonable, accomplishes its evident purpose, provides for a guard to marriage fully as effective in the vast majority of cases as the application of the Wassermann test. The court is inclined to the opinion that the fee of $3 provided by the law is a very meager one; it should not, however, feel justified in holding the law unconstitutional on this ground.

Nor has the court been able to appreciate the contention that the law interferes in any respect with religious liberty.

Treatment Must be Tested by Principles and Practice of Particular School

(State vs. Smith (Idaho), 138 Pac. R. 1107)

The Supreme Court of Idaho says that it seems to be a sound and reasonable rule and well established by the authorities that the treatment of a physician of one particular school is to be tested by the general principles and practices of his school and not by those of other schools, and that a physician or surgeon is bound to exercise such reasonable care and skill as is possessed and exercised by physicians and surgeons generally in good standing of the same system or school of practice or treatment in the locality and community of his practice, having due regard to the advanced state of the school or science of treatment at the time of such treatment. When a patient selects any one of the many schools of treatment and healing to serve him, he thereby accepts and adopts the kind of treatment common to that school or class, and the care, skill, and diligence with which he is treated, when questioned in a court of justice, should be tested by the evidence of those who are trained or skilled in that school or class.

Society Proceedings

COMING MEETINGS

Amer. Assn. of Obstetricians and Gynecologists, Buffalo, Sept. 15-17.
American Electro-Therapeutic Association, Battle Creek, Sept. 15-17.
American Roentgen Ray Society, Cleveland, Sept. 9-12.
Colorado State Medical Society, Boulder, Sept. 8-10.
Indiana State Medical Association, Lafayette, Sept. 24-25.
Kentucky State Medical Association, Newport, Sept. 23-25.
Med. Soc. of the Mo. Valley, Des Moines and Colfax, Ia., Sept. 17-19.
Michigan State Medical Society, Lansing, Sept. 11-12.
Oregon State Medical Association, Portland, Sept. 10-11.
Pennsylvania State Medical Society, Pittsburgh, Sept. 21-24.
Utah State Medical Association, Salt Lake City, Sept. 29-30.
Washington State Medical Association, North Yakima, Sept. 21-23.

The Sound Man.—Health is civic. Sound men will eliminate poverty and that of itself should make us all sanitarians. Sound men will learn to do without jails, recognizing that so-called criminals are properly speaking candidates either for educational reformatory or for a custodial hospital, and therefore again I turn gladly toward the dawn of the new health.—Edward T. Devine in the *Survey*.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Anatomy, Philadelphia

July, XVI, No. 3, pp. 259-369

1 Development of Mammalian Jugular Lymphsac, of Tributary Primitive Ulnar Lymphatic and of Thoracic Ducts and Hemal Vascular. G. S. Huntington, New York.
2 Skull of Human Fetus of Forty MM. C. C. Macklin, Toronto.

American Journal of Tropical Diseases and Preventive Medicine, New Orleans

July, II, No. 1, pp. 1-98

3 Late Outbreak of Plague in Havana. A. Agramonte, Havana, Cuba.
4 Opportunities and Needs of American Student and Investigator in Tropical Medicine. R. P. Strong, Boston.
5 Influence of Tropical Residence on Blood. W. P. Chamberlain, U. S. Army.
6 Trachoma. M. V. Safford, Boston.
7 Treatment of Trachoma by Grattage. L. Schwartz, Cebu, P. I.

Archives of Internal Medicine, Chicago

July, XIV, No. 1, pp. 1-142

8 *An Acid-Fast Streptothrix (Nocardia). D. J. Davis, Chicago.
9 *Blood in Inanition. J. E. Ash, Boston.
10 *Pathologic Physiology of Circulation During Hemorrhage. C. J. Wiggers, New York.
11 *Blood-Pressure in Pneumonia. L. H. Newburgh and G. R. Minot, Boston.
12 *Pneumococcus Infection and Lobar Pneumonia. R. Cole, New York.
13 *Color-Index of Red Blood-Corpuscles. E. Meyer, Strassburg and E. E. Butterfield, New York.
14 *Human Streptotrichosis and Its Differentiation from Tuberculosis. E. J. Claypole, Berkeley, Cal.
15 *Preliminary Report on Production, Action and Therapeutic Effects of Leukocytic Extracts. R. A. Archibald and G. Moore, Oakland, Cal.
16 *Comparison of Bang's Micromethod for Determining Blood Sugar with Bertrand's Method. R. Fitz, Boston.

8. **Acid-Fast Streptothrix.**—There is a fairly well-defined group of infections, the great majority of which are pulmonary, caused by weakly acid-fast branching mycelial growths (nocardia) which do not form ray-like granules. These cases clinically are not ordinarily distinguished from pulmonary tuberculosis. A case is cited by Davis in which the pulmonary lesions were very probably caused by such an organism. For the treatment of such cases, he says, potassium iodid should be given in large doses.

9. **Blood in Inanition.**—Ash found that the effects of starvation on the blood are: 1. There is a slight actual loss in hemoglobin, more marked during second ten days. 2. There are moderate fluctuations in water content, particularly during first half of period. 3. There is a decided rise in polymorphoneutrophils in the early days. 4. There is an increase in coagulability, especially after the first two weeks. 5. The blood as a whole is distinctly resistant to the effects of uncomplicated inanition, permitting of entire abstinence from food for long periods of time (at least thirty-one days) without deleterious consequences, as far as the blood is concerned.

10. **Pathologic Physiology of Circulation During Hemorrhage.**—Wiggers states that every hemorrhage, except one coming from a very large vessel, has a natural tendency to be checked long before the loss of blood becomes dangerous. The duration of bleeding depends not so much on the size of the vessels wounded as on the facility with which an efficient clot forms over the opening. When blood is shed, it begins to coagulate on the tissues at a distance from the opening. Having formed a point of adhesion to the tissues, it is added to by accretion until it reaches and covers the wound. The factors which determine the distance of the first clot formation and its development are, therefore, directly concerned with the duration of hemorrhage. Other factors being equal, the pressure at the arterial opening determines the distance that blood will be ejected before the force is sufficiently spent to permit the coagulum to form.

Wiggers has found that the maximal pressure in the systemic as well as in the pulmonary circuit is often entirely determined by the depth of respiration. It is quite possible that a drug which, in a normally breathing animal, increases the cardiac output and causes a rise in the average mean pressure may, nevertheless, by reducing the dyspnea during hemorrhage actually lessen the maximal pressure in the artery. The surface on which blood is shed determines the extent of its spread. Thus, the smooth surface on which the intestinal and uterine vessels rupture compares unfavorably with the reticular lung parenchyma and subcutaneous connective tissue. So, also, the spread may be limited by an ulceration or excavation.

The coagulation time directly influences the course of clot formation. The formation of clots may be retarded or prevented by muscular contractions of organs. The regular cardiac contraction, as a rule, absolutely prevents any clot formation over wounds of the heart and forms the only serious element in such wounds. The rhythmic peristalsis in the stomach and intestines are very unfavorable for clot formation and the induction of these movements in the intact abdomen by injections of epinephrin may possibly be sufficient to counterbalance any such favorable vascular influence. On the other hand, the only hemostatic value of atropin resides in its power to inhibit muscular movements and its use in conjunction with vascular agents such as epinephrin in hemorrhage from muscular organs is physiologically indicated especially, as the increasing percentage of carbon dioxid in the blood itself tends to increase the rhythmic contraction of organs. When hemorrhage terminates favorably by coagulation, the volume of blood returned to the right auricle increases with surprising rapidity. In consequence of the better venous supply and greater output of both ventricles, the pulse-pressure increases, for there is little alteration in the peripheral resistance and the increase in the volume elasticity coefficient remains an almost negligible factor. Both systolic and diastolic pressures thus gradually rise, owing to the augmented cardiac output.

All experimental observations made by the method described by Cope have indicated to Wiggers that vasoconstriction is a gradual process, starting while hemorrhage is still in progress and continuing after its cessation. If coagulation fails to occur, the time soon comes when the reduction in blood-volume exceeds the possibilities of lymph absorption, to such an extent that the mechanical function of the circulation cannot be efficiently carried out. The amplitude of cardiac contraction then decreases, largely because fluid is lacking to feed the pump. The reasons for saline infusion or blood-transfusion is obvious. Epinephrin also favors the rapidity of cardiac contraction in such cases and so improves the arterial pressure. The lack of oxygen in the blood soon changes the previous stimulation of the respiratory center to a depression. Slow and shallow breathing, occasionally marked by a deeper gasp, leads to complete cessation. The "pressor influence" of augmented breathing is removed and the blood-pressure falls rapidly. Asphyxial changes in the circulation terminate the case. The heart-beats are slow but of great amplitude and vigor, thus making a last attempt to elevate the pressure, which is partly successful but soon fails for want of oxygen.

11. **Blood-Pressure in Pneumonia.**—The blood-pressure curve does not suggest to Newburgh and Minot that there is a failure of the vasomotor center in pneumonia, nor are low systolic pressures "invariably of evil omen." The systolic pressure in the fatal cases tends to be higher than it is in the recoveries. Blood-pressure measurements in pneumonia cannot be used as a basis for treatment. Prognostic inferences based on the relation of the level of the systolic pressure curve to the pulse curve (Gibson's rule) are wrong more often than they are right. The rate of the pulse and not the level of the pressure is the chief factor in deciding whether the pressure will fall above or below the pulse. The pulse-pressure data secured by the authors are insufficient in number to justify conclusions.

12. **Pneumococcus Infection and Lobar Pneumonia.**—That the symptoms in pneumonia are probably due to toxic substances derived from the bacterial cells is the belief held by Cole. The outcome is dependent on the virulence of the organisms concerned and on the ability of the body, first to limit the local infection, and second, to prevent the invasion of the blood by the organisms, as on the latter the outcome of the disease mainly depends. Cole also believes that leukocytes probably play a part in the resistance, certainly as regards the local spread and probably also to some extent as regards the general infection. The most important part in prevention of the general infection is probably played by immune substances contained in the serum. Such substances are present in the serum of immunized animals. Pneumococci differ in regard to their immunologic reactions and on these they may be divided into several groups. In order to use immune serum effectively in treatment, as in prevention, Cole states, it is necessary to employ the serum effective against the group of organisms to which the special organism causing the infection belongs. Immune serums effective against two of the most important groups have been produced. This treatment has been carried out in a limited number of patients with promising results. It is probable that the methods of application of such serums will be improved, and it is possible that the method may be combined with other measures directed toward other factors which are important for the outcome. In any case, facts regarding the nature of the disease are being disclosed, and the outlook, at least for lessening the ravages of this dreadful disease, is encouraging.

13. **Color-Index of Red Blood-Corpuscles.**—The high color-index in pernicious anemia Meyer and Butterfield state is due to an increase in the oxyhemoglobin content of the erythrocytes. A quantitative study of the light absorption shows that oxyhemoglobin alone and no other derivative of hemoglobin is present in the blood of cases of pernicious anemia with a high color-index. The color-index of normal human blood varies within the narrow limits of 0.9 to 1.1. The average total hemoglobin concentration of normal defibrinated human blood is in the neighborhood of 16 gm. in 100 c.c. The color of the red blood-corpuscles is best explained by the principle of dichromatism as applied to the absorption spectrum of oxyhemoglobin.

14. **Streptotrichosis and Its Differentiation from Tuberculosis.**—Claypole holds that streptotrichosis is more common than generally supposed and frequently not differentiated from other infections; especially is it confused with tuberculosis. Clinical signs are not characteristic enough to determine the diagnosis accurately, therefore discharges—sputum, pus, etc.—should be carefully examined fresh in as large quantities as possible, and smears stained with carbolfuchsin and Gram stains. The amount of decolorization in the carbolfuchsin preparations should be varied so as to differentiate the less acid-fast types. Streptotrichins (glycerinated bouillon cultures, concentrated), made from the non-acid-fast mycelial and partly acid-fast bacillary organisms, give definite skin reactions on persons with frank infections, but do not show on controls (persons presumably non-infected) including cases of recognized tuberculosis. This either shows the infection to be less general than that due to the tubercle bacillus or else the reaction to be a less long-lasting one. Streptotrichosis and tuberculosis may exist in the same person at the same time, as evidenced by the appearance of both organisms in the sputum and both skin reactions. Gland and bone infections with streptotriches may be demonstrated by skin reactions as well as lung infections. This still further broadens the field for confusion between the tuberculoses and streptotrichoses.

15. **Action and Therapeutic Effects of Leukocytic Extracts.** Leukocytic substances possessing positive therapeutic value were procured by Archibald and Moore from leukocytes obtained directly from the blood of normal animals. These substances may be obtained in quantities which render them not only therapeutically practical but commercially possible,

conditions that can hardly be claimed for leukocytic extracts prepared from inflammatory leukocytes. The parenteral injection of leukocytic substances causes profound changes in the blood, producing a marked leukocytosis and marked changes in the individual leukocytes. As to the significance of these phenomena no opinion can be offered at this time. The authors hold that leukocytic extracts have not sufficient direct bactericidal powers to account for the profound changes produced following their parenteral introduction into an animal suffering from an infectious disease, and the beneficial results obtained are probably due to the fact that the extracts furnish elements which stimulate the fatigued or exhausted leukocytes, enabling them to carry on their function of phagocytosis and produce the changes incidental thereto.

16. **Bang's Micromethod for Determining Blood-Sugar with Bertrand's Method.**—Comparative experiments by Fitz show that the results obtained by the micromethod were not absolutely accurate if the results obtained by the Bertrand method are considered correct. In a series of forty-two determinations by both methods, however, in only two cases was there a difference of more than 0.03 gm. per 100 c.c. of blood. This means that, while the absolute error was large, the relative error was slight. The curve of blood-sugar determinations made from all the examinations was closely parallel. Hence for comparative and repeated studies in blood-sugar estimations the micromethod is admirable. Furthermore, since the amount of blood required to make the test is so small, and the technic so simple, the method affords an excellent clinical means for the estimation of blood-sugar.

Arizona Medical Journal, Phoenix

July, II, No. 6, pp. 5-14

17 Postoperative Treatment of Our Abdominal Cases. A. W. Morton, San Francisco.

Arkansas State Medical Society Journal, Little Rock

July, XI, No. 2, pp. 35-59

18 Evolution of Knowledge Pertaining to Syphilis. A. H. Cook, Hot Springs.
19 Malignant Degeneration of Skin Blemishes. W. R. Bathurst, Little Rock.
20 Syphilis of Kidneys. Report of Cases. E. H. Martin and E. A. Purdum, Hot Springs.
21 Tests of Renal Function. W. H. Deaderick, Hot Springs.

Boston Medical and Surgical Journal

July 30, CLXXI, No. 5, pp. 177-216

22 Cesarean Section. Analysis of Sixty Cases. T. F. Greene, Boston.
23 Fasting Metabolism of Infants. H. Murschhauser, Dusseldorf, Germany.
24 Myatonia Congenita. Report of Case. C. H. Dunn, Boston.
25 Pneumothorax for Hemoptysis. E. von Adelung, Oakland, Cal.

Florida Medical Association Journal, Jacksonville

July, I, No. 1, pp. 1-32

26 Organized Medicine and Legislation. J. H. Pierpont, Pensacola.
27 Karell-Kur. T. Truelsen, Tampa.
28 Diagnosis and Treatment of Venereal Ulcer. W. P. Dey, Jacksonville.
29 Sand-Spur in Larynx—Its Removal, Report of Two Cases. C. D. Christ, Orlando.

Journal of Biological Chemistry, Baltimore

July, XVIII, No. 2, pp. 133-327

30 *Rate of Disappearance of Ammonia from Blood in Normal and in Thyroidectomized Animals. C. Jacobson, Chicago.
31 Basal, Gaseous Metabolism of Normal Men and Women. F. G. Benedict, L. E. Emmes, P. Roth and H. M. Smith, Boston.
32 Purin Enzymes of Orang-Utan (Simia Satyrus) and Chimpanzee (Anthyropo-Pithecus Troglodytes.) H. G. Wells and G. T. Caldwell, Chicago.
33 Soluble Polysaccharides of Lower Fungi. 1. Mycodextran, New Polysaccharide in Penicillium Expansum. A. W. Dox and R. E. Neidig, Iowa.
34 Contribution of Bacteria to Feces after Feeding Diets Free from Indigestible Components. T. B. Osborne and L. B. Mendel, New Haven, Conn.
35 *Preparation of Creatin and Creatinin from Urine. S. R. Benedict, New York.
36 *Estimation of Creatin. S. R. Benedict, New York.
37 Origin of Urinary Creatin. S. R. Benedict and E. Osterberg, New York.
38 Estimation of Phosphorus in Biologic Material. A. E. Taylor and C. W. Miller, Philadelphia.
39 *Synthesis and Rate of Elimination of Hippuric Acid after Benzoate Ingestion in Man. H. B. Lewis, Philadelphia.
40 *Formation of Glucose from Dioxyacetone in Diabetic Organism. A. I. Ringer and E. M. Frankel, Philadelphia.
41 Conjugated Sulphuric Acid from Tendomucoid. P. A. Levene and F. B. La Forge, New York.
42 *Metabolic Relationships of Acetone Substances. W. M. Marriott, St. Louis.
43 Turbidity Methods for Determination of Acetone, Acetoacetic Acid and B-Oxybutyric Acid in Urine. O. Folin and W. Denis, Boston.
44* Quantitative Determination of Albumin in Urine. O. Folin and W. Denis, Boston.
45 Metabolism in Bence-Jones Proteinuria. O. Folin and W. Denis, Boston.
46 Importance of Liver in Urea Formation from Amino-Acids. C. H. Fiske and J. B. Sumner, Boston.
47 *Volumetric Method for Estimation of Total Sulphur in Urine. G. W. Raiziss and H. Dubin, Philadelphia.
48 Vicine. P. A. Levene, New York.
49 *Iodin Content of Tuberculous Tissues. P. A. Lewis and R. B. Krauss, Philadelphia.
50 Case of Pentosuria. P. A. Levene and F. B. La Forge, New York.

30. **Disappearance of Ammonia from Blood.**—Even with the kidneys excluded from the circulation Jacobson found that ammonia injected into the blood is so rapidly removed from it that only a very slight excess is present five minutes after the injection. There is only a very slight difference between the normal and parathyroidectomized animal in the rate of disappearance of the ammonia from the blood.

35. **Preparation of Creatin and Creatinin from Urine.**—An interesting point in connection with the process described by Benedict is that it was originally tried as an expeditious method for the preparation of pure creatin. Instead of yielding creatin, perfectly pure creatinin was obtained. Following is the procedure: The recrystallized creatinin zinc chlorid (which should be finely powdered) is placed in a dry flask and treated with seven times its weight (by volume) of concentrated aqueous ammonia. The mixture is slightly warmed and gently agitated by shaking until a clear solution is obtained, care being taken to drive off no more ammonia during the warming than is necessary to obtain a clear solution. The flask is stoppered, allowed to cool, and then placed in an ice-box for an hour or more. Pure creatinin crystallizes out, and the first product obtained by this process should read 100 per cent. colorimetrically. The yield is from 60 to 80 per cent. of the theoretical. If the product is colored slightly yellow it may be recrystallized either from boiling alcohol, or by dissolving in five times its weight (by volume) of concentrated ammonia (warming enough to effect solution) and letting the solution stand in a cold place for some hours. Recrystallization is usually unnecessary. The product is perfectly pure, and may be used as a standard. Benedict adds that creatin is not converted at all to creatinin by warming with concentrated ammonia. So it would appear that this latter solution is perhaps the only aqueous solution in which either creatin or creatinin may be dissolved without any change from one into the other.

36. **Estimation of Creatin.**—The procedure for the determination of creatin in urine devised by Benedict is as follows: Such a volume of urine as will contain between 7 and 12 mg. of total creatinin is introduced into a small flask or beaker and from 10 to 20 c.c. of normal hydrochloric acid are added, together with a pinch or two of powdered or granulated lead. The mixture is boiled over a free flame as slowly or as rapidly as may be desired until very nearly down to dryness, when the heating should be continued to dryness either on a water bath, or very easily by simply holding the vessel in the hand and heating carefully for a moment or two. The residue should best stand on a water bath for a few minutes until most of the excess of hydrochloric acid gas has been expelled, after which it is dissolved in about 10 c.c. of hot water and the solution rinsed quantitatively through a plug of cotton or glass wool (to remove all metallic lead) into a 500 c.c. volumetric flask. Twenty to 25 c.c. of saturated picric acid are added, and about 7 to 8 c.c. of 10 per cent. sodium hydroxid solution

which contains 5 per cent. of Rochelle salt. The flask is filled to the mark at the end of five minutes and read as usual.

39. **Synthesis of Hippuric Acid.**—Lewis states that in man after the administration of from 6 to 10 gr. of sodium benzoate elimination as hippuric acid takes place very rapidly, 85 to 90 per cent. of the ingested benzoate being excreted in from five to six hours. The rate of elimination of hippuric acid after the administration of sodium benzoate is only slightly less rapid than after the administration of hippuric acid. After benzoate ingestion, the urine collected during the first six months, the period during which the greater part of the hippuric acid is being excreted, has a lower urea plus ammonia content than in a normal control period, indicating that hippuric acid nitrogen is derived at the expense of the nitrogen normally eliminated as urea.

40. **Formation of Glucose from Dioxyacetone.**—Four experiments were performed by Ringer and Frankel in which dioxyacetone was administered subcutaneously to phlorizinized dogs. In every case a rise in the glucose elimination followed. The "extra" glucose in one experiment corresponded to an amount of glucose which would arise if all of the carbon of dioxyacetone were converted into glucose. The effect of dioxyacetone on acidosis is decidedly antiketogenetic in three of the four experiments. Dioxyacetone was found in the urine in unchanged form in only one of the four experiments. In that case the urine reduced Fehling's solution in the cold and reacted positively with the Miller-Taylor reagent. In none of the other experiments did dioxyacetone appear in the urine.

42. **Metabolic Relationships of Acetone Substances.**—The behavior of acetoacetic acid, *l*- and *dl*-oxybutyric acids and butyric acid, in the metabolism was studied by Marriott by means of incubation experiments on hashed organs, and by parenteral introduction into normal and phlorizinized dogs and young pigs. The analytic results obtained from individual organs, the circulating blood, and the urines have led to the following conclusions: 1. Acetoacetic acid can be readily converted into *dl*-oxybutyric acid in the organism, but the reverse change is difficult, and probably not accomplished under normal conditions. 2. The dextro component of *dl*-oxybutyric acid can be utilized even by the diabetic organism, and this is the explanation of the appearance only of *l*-oxybutyric acid in diabetic urines. 3. The normal path of fatty acid catabolism is as follows: Fatty acid—(butyric acid?)—acetoacetic acid—d-oxybutyric acid (readily burned) *l*-oxybutyric acid (difficultly burned).

44. **Estimation of Albumin in Urine.**—The principle of the turbidity method described by Kober for the determination of proteins in milk and in digestion mixtures as used by Folin and Denis for the determination of albumin in the urine is as follows: To about 75 c.c. of water in each of two 100 c.c. volumetric flasks is added 5 c.c. of a 25 per cent. solution of sulphosalicylic acid. A second method, the gravimetric determination of albumin in urine is described as follows: Ten cubic centimeters of urine are pipetted into an ordinary conical centrifuge tube which has been previously weighed. To this urine is then added 1 c.c. of 5 per cent. acetic acid and the tube allowed to stand for fifteen minutes in a beaker of boiling water. At the end of this time the tube is removed from the water bath and centrifuged for a few minutes. The supernatant liquid is then poured off, the precipitate in the tube is stirred up with about 10 c.c. of boiling 0.5 per cent. acetic acid and again centrifuged. The supernatant liquid is then again poured off and the precipitate in the tube again washed, this time with 50 per cent. alcohol. After centrifuging and pouring off the supernatant liquid for a third time the tube is placed for two hours in an air bath at 100 to 110 F., then cooled in a desiccator and weighed.

47. **Volumetric Estimation of Sulphur in Urine.**—This method has for its basis, the estimation of benzidin in the precipitate of benzidin sulphate, rather than the sulphuric acid.

49. **Iodin Content of Tuberculous Tissues.**—Tuberculous tissue derived from animals to which no iodin preparation has been knowingly administered Lewis and Krauss state may contain amounts of iodin very appreciably higher than normal control tissue of the same animal. While it is quite probable that tuberculous tissue in animals treated with iodin products may store up iodin, this has been by no means clearly shown in any experiments so far reported. The highest figures for the tuberculous tissue of untreated animals in their experience may equal the highest figures of those reported by others as evidence for the localization in the tissue of iodin intentionally administered.

Journal of Cutaneous Diseases, New York

July, XXXII, No. 7, pp. 481-544

51 Lichen Planus of Tongue Alone. D. W. Montgomery, San Francisco.
52 Industrial Skin Diseases. H. H. Hazen, Washington, D. C.
53 Cheilitis Exfoliativa. H. K. Gaskill, Philadelphia.

Journal of Nervous and Mental Diseases, Lancaster, Pa.

July, XLI, No. 7, pp. 417-488

54 Paramyoclonus Multiplex, Including Case with Necropsy Showing Lymphocytic Infiltration of Pia. E. M. Williams, Sioux City, Ia.
55 Case of Pure Psychic Epilepsy. E. S. Abbot, Waverly, Mass.
56 Relative Weight of Liver and Brain in Psychoses. A. Myerson, Boston.

Lancet-Clinic, Cincinnati

July 18, CXII, No. 3, pp. 61-88

57 Remarkable Cases of Morphin Habit. E. M. Strasser, Cincinnati.
58 Doctor. H. R. Alburger, Indianapolis.
59 Treatment of Syphilis of Nervous System by Means of Salvarsanized Serum *in Vivo;* Ninety-One Injections in Twenty Cases. R. B. H. Gradwohl, St. Louis.

July 25, No. 4, pp. 89-116

60 Results from Cultivation of Neglected Field. J. H. Radley, New York.
61 Interpretation of Roentgenograms. R. H. Boggs, Pittsburgh.
62 Adenoids. C. C. Jones, Cincinnati.

Medical Record, New York

August, 1, LXXXVI, No. 5, pp. 187-232

63 Serum Treatment of Pneumonia. J. C. Roper, New York.
64 Case of Sigmoid Diverticulitis Simulating Malignancy. R. Abbe, New York.
65 Ulcer of Lesser Curvature. J. R. Verbrycke, Jr., Washington, D. C.
66 Primary Carcinoma of Vagina Treated by Radium and Roentgen Rays. I. Levin, New York.
67 Case of Volvulus of Jejuno-ileum with Anterior Gastro-enterostomy. W. E. Tolle, Portland, Me.
68 Apparatus for Neurovascular Training. Simon Baruch, New York.
69 Conservatism in Treatment of Disease. B. Robinson, New York.
70 Socialization of Medical Training and Practice. I. C. Philbrick, Lincoln, Nebr.
71 Spinal Subluxations; Their Nature and Cause. J. H. Radley, New York.
72 "Organism of Small-Pox, Chicken-Pox, and Vaccinia. H. Greeley, Brooklyn.

72. **Organism of Small-pox, Chicken-pox and Vaccinia.**—Greeley noted that in fluid vaccine virus, by hanging-drop observation, one might frequently see large numbers of motile bodies and that the same, no matter what vaccine virus was used, could be obtained from the vesicles of the inoculated. They stained with Giemsa, Neisser and Unna stains. The organism is evidently a sporothrix. In the form of multiplying spores (thus in vaccine virus and in all papules, vesicles and pustules) it is spherical, its diameter varying in the neighborhood of from 0.3 to 0.6 microns. When actively multiplying all present a nucleus which takes the usual anilin dyes with varying facility. A frequent form is a pneumococcus-like couplet which, when stained by Neisser's method, shows a colorless refractile capsule with slightly pink lining, of figure 8 shape, and, within, a blue-stained nucleus in each section—the two nuclei often connected by a bridge of pink whose intensity varies inversely with the distance between nuclei. When these nuclei are nearest together (cell just dividing) the pink is very intense. In all skin lesions the spores multiply, as stated, developing into branching masses whose units are the same as in the figure 8 shape described. These conglomerations often show,

projecting from the extremity of a branch, highly refractile, non-stain-taking spores, borne on the end of a little stem. Several are sometimes seen at the end of the same branch, and often two connected in dumb-bell form. These spores when detached are actively motile, the stem becoming the single flagellum possessed. Muir's or Van Ermengem's flagellum staining method will demonstrate. Greeley states that these spore bodies are evidently the *"Cytoryctes variolae"* described by Councilman and others. They divide and give rise in skin lesion and in culture to the formations aforementioned.

Under certain cultural conditions (which are being studied and will be reported later) a full mycelial growth develops with hyphae and terminal spores. Greeley suggests that this is probably what occurs on the mucous membranes (nasal for instance) in the beginning of these diseases, and the spores, penetrating into the blood-vessels, are wafted to all parts of the system, landing in the skin capillaries in which conditions of lower temperature and more light, perhaps, favor further proliferation. In this connection we should remember how the eruption favors the face and hands.

The organism is gram positive—nucleus purple, capsule sometimes light pink—and when stained with carbol-fuchsin is slightly resistant to decolorization with dilute acid, nucleus resists 10 per cent. acetic well. Organisms will not produce a macroscopic growth on any known solid media, aerobically or under hydrogen. It readily passes Berkefeld laboratory filter No. 5. Cultivation has been successful enough to permit the second generation derived from a specimen of the market's vaccine virus to give one take out of two human inoculations. An apparently identical organism has been obtained from the vesicles of twenty-five cases of successful vaccination, from a like number of cases of undoubted chicken-pox, and from five cases of recognized and unquestionable small-pox.

New Jersey State Medical Society Journal, Orange

July, XI, No. 7, pp. 325-378

73 Medical Problems. E. Hollingshead, Pemberton.
74 Pathology Underlying Abdominal Symptoms. J. B. Deaver and D. B. Pfeiffer, Philadelphia.
75 Roentgenologic Study of Alimentary Canal. W. H. Axford, Bayonne.
76 Fractures. H. B. Costill, Trenton.

New Mexico Medical Journal, Las Cruces

July, XII, No. 4, pp. 101-127

77 Oil-Ether Colonic Anesthesia. W. W. Spargo, Albuquerque.
78 Treatment of Abortion. W. Howe, E. Las Vegas.
79 Operative Technic. S. D. Swope, Deming.

New York Medical Journal

August 1, C, No. 5, pp. 205-252

80 Typhoid in Early Life. J. P. C. Griffith, Philadelphia.
81 *Cardiac Headache. L. Kolipinski, Washington, D. C.
82 Constitutional States in Relation to Gynecologic Conditions. R. S. Morton, New York.
83 *Four Unusual Obstetric Complications. J. C. Applegate, Philadelphia.
84 Treatment of Scarlet Fever. H. C. Becker, New York.
85 *Eosinophilia in Chorea. S. S. Leopold, Philadelphia.
86 Necessity for Cooperation of Medical Profession in Successful Treatment of Pyorrhea Alveolaris. D. B. Freundlich, New York.
87 New Electric Ophthalmoscope. C. H. May, New York.

81. **Cardiac Headache.**—The prime indication in the treatment of a headache or its analogue, a facial neuralgia from a weak or weakened heart, Kolipinski says, is to strengthen, support, or, if possible, to restore it to normal. This can alone be done where the many acts in life which overtax this heart and weaken it still more, are persistently and intelligently avoided. Where eyestrain is found glasses must be used. If obesity is present the weight must be brought to normal. If tobacco is used it must be given up. This applies in every case of cigarette smoking and to this petty and enfeebling vice when practiced by females. The weakened heart of chronic nicotin poisoning is a counterpart or double of organic myocardial weakness, and it is impossible to separate or distinguish one morbid state from the other until the tobacco poisoning is eliminated.

Rest of the body must be practised as a daily system. One who works must retire at 9 or 10 o'clock and arise at 7. For one incapable of work or who lives retired, the afternoon rest must never be omitted. Afternoon sleep indicates accurately and absolutely a marked degree of exhaustion. Sleep or drowsiness in the afternoon does not occur when the subject possesses more muscle tone and strength, i. e., a stronger heart. Where the afternoon rest is not taken, where the patient is engaged in business or work, the daily hours of lying down should still be as long as possible. Twelve continuous hours of rest are not as helpful as the same number of hours of the afternoon and night. The afternoon rest, which is an adaptation of the tropical siesta, a physiologic habit, is of great benefit in the treatment of all heart diseases not in an acute or grave condition.

Medicinal treatment is essential to cure a chronic headache. There are two remedies of similar action which will accomplish this. Digitalis is the first. It should be given in a single dose, repeated in one or two days, and continued for months and years. The powder of the leaf, its tincture, fluid extract or infusion may be prescribed. Rest and digitalis cure cardiac headache. Even improvement or occasional cure results, but the obstinacy of this afflicting malady is so inveterate that the patient does not receive fair and full attention where they are not combined. Now and again digitalis fails or must be given with sodium iodid to regulate the pulmonic circulation. Where digitalis does not help, the substitute for the time is strophanthus; with arterial sclerosis, aortic valve defects, pulmonary engorgements, strophanthus and sodium iodid. Strophanthus in a few instances replaces digitalis. Sometimes digitalis must be suspended and strophanthus given instead until the heart again becomes susceptible to digitalis. Strophanthus acts best with laxative or purgative drugs. In fact, the strophanthus action, with free movements of the bowels and vomiting, is no disadvantage when it is given for cardiac asthma, lung edema or similar states of other viscera. An efficient remedy for a severe paroxysm of cardiac headache will be found in 2 grains of caffein citrate in a teaspoonful of aromatic elixir every fifteen or thirty minutes till relief is felt.

83. **Obstetric Complications.**—The first report Applegate makes is one cesarean section including hysterectomy, under spinal anesthesia, eighteen hours after complete rupture of the uterus at term. The second report is of a patient with fibromyxomatous degeneration of the chorion associated with an anomalous fetus, partially macerated, with hare lip, cleft palate, ankylosed shoulder and elbow joints, and ascites. The diagnosis of placenta praevia had been made by the family physician, and it proved to be the marginal type. The third case was one of multiple subserous fibroids of the uterus, complicating pregnancy; hysterectomy was performed at the third month of gestation. Under ether inhalation anesthesia, the patient left the hospital in three weeks in good condition. The fourth case was one of placenta praevia centralis at the beginning of the eighth month. Cesarean section was performed under spinal anesthesia.

85. **Eosinophilia in Chorea.**—Leopold studied the blood in twenty cases of chorea. Of the twenty cases a distinct eosinophilia varying from 4 to 16 per cent. was present in ten (50 per cent.). There were nine patients showing recurring attacks of chorea. The number of attacks varied from two to five. Eosinophilia was found in six of the nine patients (66⅔ per cent.). Four of the nine patients showing recurring attacks of chorea had only a sigle recurrence. Of these four cases, eosinophilia (4 per cent.) was present in one. The three remaining cases did not show eosinophilia. In one the diagnosis was very doubtful. The five remaining cases showed from three to five distinct recurrences; eosinophilia ranging from 6 to 16 per cent. was present in every case.

There were eleven cases in which the blood was studied during or after the first attack. Three of these were not considered, because in one the diagnosis was extremely

doubtful, and in the other two there was no chorea perceptible at the time the blood examination was made, although the patients had apparently recovered from true chorea. None of the three showed eosinophilia. Of the eight remaining cases studied in the first attack, eosinophilia, ranging from 4 to 6 per cent., was present in four (50 per cent.). In none were the eosinophils higher than 6 per cent., whereas in the recurring cases 13, 15 and 16 per cent. were observed.

New York State Journal of Medicine

July, XIV, No. 7, pp. 339-388

88 Surgical Treatment of Empyema. C. N. Dowd, New York.
89 Antityphoid Vaccination in Childhood. F. F. Russell, U. S. Army.
90 Surgery of Acute Suppurative Spreading Infections of Fingers and Hands. W. B. Brinsmade, Brooklyn.
91 *Causes and Treatment of Eczema in Infancy and Childhood. R. G. Freeman, New York.
92 Puerperal Thrombophlebitis. W. M. Brown, Rochester.
93 Use of Modified Champetier De Ribes Bag in Obstetrics. G. L. Brodhead, New York.
94 *Vaginal Discharge. F. McMorrow, Syracuse.
95 Ectopic Pregnancy. H. P. Jack, Hornell.
96 Syphilis as Complication of Pregnancy. W. T. Getman, Buffalo.
97 Economic Importance of Diseases of Ear in School Children. J. E. Sheppard, Brooklyn.
98 Unification of Child Welfare Forces. S. Block, Brooklyn.
99 Gonorrheal Vaccines. S. M. Strong, Brooklyn.
100 Injury to Shoulder. I. M. Slingerland, Fayetteville.

91. **Eczema in Infancy.**—The eczema of infancy and early childhood which, Freeman states, is occasionally due to external irritation is usually caused by gastro-enteric derangement and must be attacked primarily by correcting that derangement. The food should be cut down to the caloric requirements, the ration should be balanced and digestion aided. Stewed fruits and cream should be prohibited. The parts affected should be kept well covered with non-irritating applications.

94. **Vaginal Discharge.**—In ordinary cases of cervicitis (not of gonorrheal origin), the application of strong solutions of 20 per cent. and 30 per cent. solution of nitrate of silver, tincture of iodin or pyroligneous acid, after first clearing out the mucus from the cervical canal by an alkaline solution, McMorrow says, will sometimes effect a cure, but healing by medicament is rare—only in cases in which the necks of the glands are wide open and an application can get in. In the majority of cases local applications provoke new formations of stratified epithelium, which may cover or bridge over the mouths of the glands, causing a false or pseudo healing. The glands are still active and secreting mucus; generally two weeks later, rupture of the glands takes place and cervical discharge commences.

When an operation is inadvisable, an effective method of treating these bad cervical infections, is by the use of actual cautery, heated to a bright red heat introduced well into the cervical canal, making five or six deep radial strokes at each treatment, not attempting to burn out all the diseased tissue at one sitting; this treatment should be repeated in three weeks and a sterile strip of gauze is left in the vagina to take care of possible hemorrhage. McMorrow employed this plan of cauterization with good results, noticing a marked improvement and lessening of the discharge after each application. These cauterizations do not even call for a local anesthetic except in weak and nervous women, then it is well to inject a few drops of a 4 per cent. solution of cocain into the cervix; the patient is able to leave the office afterward with very little discomfort.

The best method of treating most of these infections in McMorrow's experience consists in dilating the cervix and with a sharp curet, strongly applied to the diseased cervical glands, eradicate them from the dense matrix by which they are surrounded; this method at least lays the mouths of the glands wide open and drains them. This treatment is generally curative and satisfactory. A trachelorrhaphy will often give relief if done thoroughly and enough of cervical tissue cut away, so that these glands are mostly removed at the same time. In extremely obstinate cases a circular amputation of the cervix will effect a permanent cure.

Ophthalmic Record, Chicago

July, XXIII, No. 7, pp. 325-378

101 Conservation of Vision. F. Allport, Chicago.
102 Related Figurative Chiasmal and Mean Cyclopean Images. C. F. Prentice, New York.
103 Lagrange Sclerectomy and Elliot Trephine Operation. J. Meller, Vienna.
104 Treatment of Sympathetic Ophthalmia with Atophan or Novatophan. H. Gifford, Omaha.
105 Conjunctival Hemorrhage in Typhoid. Z. C. Layson, Hinton, W. Va.
106 Practical Value of Routine Bacteriologic Examinations of Conjunctiva. W. H. Snyder, Toledo, O.

South Carolina Medical Association Journal, Seneca

July, X, No. 7, pp. 575-604

107 Injury of Vena Cava During Nephrectomy. L. Guerry, Columbia.
108 Causes and Prevention of Deafness. J. W. Jervey, Greenville.

Texas State Journal of Medicine, Fort Worth

July, X, No. 3, pp. 109-146

109 Medical Life Insurance. J. H. Florence, Houston.
110 *Treatment of Pellagra. I. Dyer, New Orleans.
111 Report of Cases of Pellagra. W. L. Allison, Fort Worth.
112 Intestinal Parasites in Texas, Microscopic Findings in Fifteen Thousand Cases. O. H. Judkins, Austin.
113 Medical and Surgical Fees. W. B. Thorning, Houston.

110. **Treatment of Pellagra.**—The general care of the pellagrin is summarized by Dyer as follows: Insist on cheerful surroundings; have the patient adopt the motto "Look up" and adhere to it. Establish a morale from the beginning by an optimistic view of the prognosis. Warn the patient of a long time treatment, of relapses and of the need of proper care and treatment between the attacks. Keep out of the sunlight. Spend the day between sun up and sun down on the shady side of the house, with the light obscured. Also keep out of the kitchen and away from over-heating occupations. Keep the patients out of bed, so long as this is possible. Do not let them go to bed except to rest, or when the symptoms of the disease compel.

When the acute symptoms are controlled, reduce the quinin hydrobromate to 2 grains three times a day and give general tonics, as the glycerophosphates, lactophosphates, iron and manganese compounds. Arsenic is permissible and serviceable. Dyer usually gives the sodium arsenite with other tonics, as:

		gm.	or	c.c.
℞	Liquor sodii arsenitis		20	gtt. iii
	Tinct. nucis vomicae	1		gtt. xv
	Tinct. gentianae comp.	1	or	gtt. xv
	Tinct. cinchona comp.	1		gtt. xv
	Syr. pruni virginianis q. s. ad	4		ʒ i

M. et Sig.: In water after meals.

Blaud's compound pills are also useful. The improvement in appetite, strength and desire to take gentle exercise are signs of improvement. No better criterion, however, can be found than the gradual gain in weight. As the loss in weight is a constant factor in the syndromes of pellagra, so the obverse is more than casual in its importance with relation to a return to normal.

The most important period of treatment in most cases of pellagra is during the usual seasons of attack or in the months of cold weather. Every effort should be made to bring the patient up to normal of resistance. The physician should see the patient often enough to maintain a psychologic relation which will permit control. The dietetic care, the medicinal treatment (tonics, regulations of functions, etc.) should be systematic. The weight should be recorded regularly so as to see what normal may be maintained. As the warm season approaches any loss of balance can be noted and met. Often a change of climate for these patients treated already during the first attack will obviate a recurrence.

Washington Medical Annals

July, XIII, No. 4, pp. 233-277

114 Kangri-Burn Cancer. A. F. A. King, Washington.
115 Three Abdominal Cesarean Sections. W. S. Bowen, Washington.
116 Cysts of Liver. D. S. Lamb, Washington.
117 Foot-Strain: Anatomic Explanation with Suggestions for Treatment. J. Dunlop, Washington.
118 Value of Birth Certificate. L. Eliot, Washington.
119 Dr. J. B. Murfree's Case of Lithopedion. D. S. Lamb, Washington.
120 Malignant Intra-Ocular Tumors. C. R. Dufour, Washington.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Tuberculosis, London

July, VIII, No. 3, pp. 135-194

1 Tuberculosis Movement in Wales. M. Paterson.
2 Roentgenography in a Tuberculosis Dispensary. J. A. P. Cullen.
3 Disinfection of Tubercle-Infected Houses. A. M. Hewat.
4 Tuberculosis in Children. E. Carling.
5 Nursing Organization and Administration for Tuberculous Patients in Country Districts. A. W. F. Sayres.
6 Aims and Methods of Tuberculosis Nurse. M. Rundle.
7 Genius and Tuberculosis. A. C. Jacobson.

British Medical Journal, London

July 18, II, No. 2794, pp. 105-160

8 *Problems in Cardiac Physiology. A. F. S. Kent.
9 *Causation, Prevention, and Cure of Goiter, Endemic and Exophthalmic. R. Farrant.
10 Anoci-Association in Prevention of Shock and Postoperative Discomforts. H. B. Butler and E. W. Sheaf.
11 *Radical Cure of Inguinal Hernia. J. O'Conor.
12 Case of Uremia with an Unusual Degree of Urea Retention. H. B. Day and W. H. Wilson.
13 Latent Dysentery, or Dysentery Carriers in Sarawak, Borneo. W. L. Christie.
14 Three Cases of Infective Arthritis Treated by Specific Methods. D. W. C. Jones.
15 Pneumococcic Arthritis Following Acute Pneumonia. W. S. Richardson.

8. **Problems in Cardiac Physiology.**—It is shown by Kent that there exist in the heart, in the neighborhood of the auriculoventricular groove on the left side of the organ, neuromuscular structures whose constituents are partly nervous and partly muscular, and these have connections with the nervous structures of the groove and with the muscular tissue of auricle and of ventricle. There exists also in the right lateral wall of the heart a mass of hitherto undescribed nodal tissue. In association with this mass there exists at least one muscular path between auricle and ventricle along which impulses can pass, and which is able to keep the chambers in physiologic association even when the auriculoventricular bundle has been cut. Experimental results have been obtained by Kent which completely bear out the anatomic fact of the existence of an additional muscular path between auricle and ventricle.

In the exposed heart of the mammal the bundle has been cut and electrocardiograms have been taken subsequently. These showed that the rhythm between auricle and ventricle persisted. In the beating heart of the mammal a thin knife was passed through the right ventricle, near the groove, and brought out in such a way as to sever completely the auricles from the ventricles with the exception of a strip of tissue at the right side of the heart. Under these conditions it was found that beats arising spontaneously in the right auricle pass through to the ventricle, and evoke ventricular beats, and, after the heart has ceased to beat spontaneously, beats excited artificially in the auricle still pass through to the ventricle and give rise to ventricular beats.

Since under these conditions the only tissue connecting the auricle to the ventricle is the strip at the right side of the heart, and the histologic part of the inquiry has already shown that an anatomic connection exists in this situation, it is impossible to avoid the conclusion that in this right lateral auriculoventricular junction there exists a muscular path capable of transmitting impulses and of coordinating the action of the chambers of the heart. Further, since, as has been shown, the muscular path is completed by the interposition of a mass of nodal tissue, through which the impulses must pass, it is clear that the conditions here are similar to those found in the case of the auriculoventricular bundle, and that the auriculoventricular pause may be explained on similar lines—that is, as being due to the passage of the impulse over tissue modified histologically and physiologically, with a resulting delay in conduction.

9. **Endemic and Exophthalmic Goiter.**—The object of Farrant's paper is to record observations made on eighty-five cases of goiter (exclusive of simple hyperthyroidism) between 1909 and 1914 as to the relationship between toxemias and diseases of the thyroid; to prove that in cases in which the thyroid is diseased the causatory micro-organism or toxemia can be determined; to show that in this way not only can diseases of the thyroid be cured, but also prevented. Endemic goiter, according to Farrant, is caused by the toxins from the atypical forms of *B. coli*. The mutants are usually conveyed by water. They become indigenous in the intestine, and different mutants of *B. coli* are to be found in the feces of cases of endemic goiter. The mutants are but rarely present in the feces of normal individuals or in the feces of individuals goiterous from other causes. It is possible to conceive circumstances which place the *B. coli* under abnormal conditions in the intestine itself, and lead to mutation and the temporary appearance of mutants in the feces of normal individuals. The mutants set up an apyrexial toxemia, which stimulates the thyroid, so leading to a colloid hyperplasia and eventually to enlargement of the gland. The whole process can be imitated in the laboratory, and endemic goiter induced in guinea-pigs by feeding with small doses of the mutants.

The supervention of a fresh toxemia while the gland is in a hyperactive state causes a complete hyperplasia, with absorption of colloid and signs of hyperthyroidism up to a condition of exophthalmic goiter. This is dependent on the intensity and duration of the fresh toxemia. Endemic goiter is preventable by the avoidance of water contamination and by the sterilization of contaminated water. It can be cured by the administration of intestinal antiseptics, the gland returns to normal, providing no degeneration has taken place. The gland as a whole involutes to normal, but the adenomata or cysts are left. A condition similar to endemic goiter can be caused by other toxemias capable of inducing a colloid hyperplasia.

Exophthalmic goiter, Farrant claims, is due to a combination of toxemias of an intensity sufficient to cause a hyperplasia with absorption of the colloid material. One acts during a period sufficient to give rise to a complete hyperplasia associated perhaps with slightly marked signs of hyperthyroidism without necessarily any glandular enlargement. The supervention of another infection stimulates the gland, which usually enlarges, and the signs of hyperthyroidism become very evident; the case develops into one of typical exophthalmic goiter. A nervous shock may lead to the diagnosis by suddenly bringing into evidence the symptoms of hyperthyroidism, especially those connected with the nervous system.

The severity and duration of exophthalmic goiter is dependent on the intensity and duration of the toxemias. If they be of short duration the disease will disappear in a few months. Exophthalmic goiter can be prevented by the detection of the early cases of hyperthyroidism and the consequent removal of the basal toxemia. Exophthalmic goiter can be cured if the causatory agents be removed before degeneration has occurred either in the gland or in those organs that are affected by the hypersecretion.

When degeneration has taken place in the thyroid removal of the toxemias causes involution to take place only in the hypertrophied portion; the adenomata and cysts are left. These require appropriate surgical treatment, as they to a certain extent keep up the symptoms of thyroid excess. Surgical treatment without removal of the cause is followed by recurrence unless so much of the gland substance has been removed that hypersecretion is impossible. Degeneration in the other organs partially recovers after involution of the thyroid; appropriate treatment is necessary for those that remain. Acute cases of exophthalmic goiter may present themselves in which surgical treatment is the only means of saving them, though the risk of death under the anesthetic perhaps precludes operation.

11. **Radical Cure of Inguinal Hernia.**—O'Conor employs a long incision, extending from the level of the pubic spine to a point about one inch below and internal to the anterior superior iliac spine. The superficial epigastric and superior external pubic vessels are seized with forceps, divided between

and ligated, and the aponeurosis of the external oblique thoroughly exposed. The intercolumnar fibers of the external ring are then snipped with scissors and with the handle of the scalpel the aponeurosis is split, parallel to its fibers, to the upper limit of the incision. The divided aponeurotic "leaves" are next seized on each side by pressure forceps, which act as tractors, and considerably facilitate the thorough separation of the former, by blunt dissector, from the underlying structures. Free and isolate the cord, and separate, incise and remove the hernial sac, and suture the opening flush with the peritoneal cavity. This completed, the cord is raised up and placed well out of range of injury behind the two tractor forceps attached to the edge of the internal leaf of the divided aponeurosis. The external leaf is drawn firmly downward and outward until the inner shelf of Poupart's ligament comes well into view.

Taking this exposed shelf as level, a curved hernia needle is passed from without inward right through the reflected aponeurosis—the lower one embracing in transit some fibers of Gimbernat's ligament—passed across the floor of Hesselbach's triangle, and made to emerge through the substance of the conjoint tendon. The needle is now threaded with strong catgut and withdrawn. The unthreaded needle is again similarly introduced about half an inch above the former and a mattress suture completed. Three more similar ones are inserted through the above level and sufficient room is left at the upper angle for the passage of the cord. When these four sutures are tied the inner shelf of Poupart's ligament is firmly approximated to the conjoint tendon. Hesselbach's triangle is completely obliterated. Finally, the two aponeurotic leaves are united by a continuous catgut suture, and in doing this insert the point of the needle deep enough to catch hold of underlying muscle in order that no intermuscular dead space may be left. The cord is left, as in Halsted's operation, superficial to the external oblique.

Journal of Obstetrics and Gynecology of British Empire, London

May, XXV, No. 5, pp. 231-302

16 Investigation of Study of Early Human Ovum. R. W. Johnstone.
17 Treatment of Retrodisplacement of Uterus. R. Worrall.

June, No. 6, pp. 303-366

18 Working of Midwives Act (England, 1902). F. H. Champneys.
19 *Sustentacular Apparatus of Female Genital Canal. V. Bonney.

19. **Displacements of Genital Canal.**—Bonney urges that the terms "prolapse of the uterus" and "falling of the womb" are misnomers and should be replaced by others expressive of the nature of the displacement. The uterus not only takes no part in the production of "prolapse," but actually resists the attempt of the vaginal culdesac to turn inside out. Inversion of the uterus and ectropion of the cervix are the uterine homologues of vaginal inversion and eversion. In the treatment of the displacements of the genital canal the nature of the displacement in each individual case should be determined accurately. The indiscriminate application of a particular method of treatment should be abandoned in favor of measures founded on the nature of the displacement in each case.

The absence in the past of a scientific basis to operative treatment has led to much bad surgery. Thus ventrofixation is still performed by some for vaginal eversion—a perfectly useless proceeding—while cases of pure vaginal inversion are still more often thus treated, although the resistance of the intact broad ligaments often makes it impossible to fix the uterus high enough to exercise efficient traction on the vaginal vault. Combined laxity of the middle and lower supporting groups is frequently dealt with by repairing the pelvic floor alone, with the natural result that the patient presently returns complaining that "womb falls again." Mistakes such as these will not occur when it is generally recognized that in the treatment of the results of sustentacular relaxation accurate knowledge of the fault that lies behind the deformity is the first essential for success.

Lancet, London

July 18, II, No. 4742, pp. 141-206

20 Prognosis. W. H. White.
21 *Incomplete Rotation of Intestinal Loop as Cause of Retrocolic Hernia. A. G. T. Fisher.
22 *Hemorrhagic Typhoid: Report of Three Cases. A. Caddy and B. Molony.
23 Oral Sepsis in Diagnosis and Treatment of Pulmonary Tuberculosis. R. C. Wingfield.
24 Auricular Flutter Followed by Paroxysmal Auricular Fibrillation. E. B. Gunson.
25 Bacillus of Bovine Tuberculosis as Factor in Phlyctenular Affections of Eye. S. Stephenson.
26 *Case of Femoral Hernia Treated by Bone Transplantation. W. H. C. Greene.
27 Intrapharyngeal Administration of Warmed Ether Vapor by Nasal Route. H. M. Page.
28 *Case of Primary Carcinoma of Liver in Child Three Years Old. W. T. Freeman.
29 English Medicine and Surgery in Fourteenth Century. D. Power.

21. **Case of Retrocolic Hernia.**—Fisher's case came to notice in the dissecting-room. The subject was a man, aged 57, whose death was due to senile degeneration of the heart. On opening the abdomen a broad apron-like fold was seen stretching across the greater part of the right side of the abdomen. Further examination showed that the fold of peritoneum was the anterior wall of a hernial sac. On the left side it was attached to the "hepatic" flexure of the colon, asecending colon and cecum. Superiorly it was attached to the lower border of the first part of the duodenum and became adherent to the right edge of the great omentum. On the right side it bulged somewhat and became continuous with the peritoneum over the right kidney and iliac fossa. Anteriorly it presented a free edge which was by no means tense, and it was devoid of any vessel. The lower free edge ran in the interspinous plane and was attached laterally to the peritoneum over the right psoas muscle, and internally to the posterior surface of the appendix and meso-appendix. The anterior wall of the sac occupied the lower half of epigastric region in its right two-thirds, right two-thirds of umbilical region, and the right lumbar and hypochondriac regions, and the upper third of the right iliac and hypogastric regions.

The cecum was rotated and kinked, so that the posterior surface looked directly forward and the anterior surface was in contact with and partly hid from view the ascending colon. The appendix occupied the upper left quadrant of the hypogastric region. The transverse colon consisted of two limbs, a descending and an ascending. The descending ran from the hepatic flexure following the left lateral plane as far as the brim of the pelvis; the ascending limb passing upward and outward in the left iliac and lumbar region to splenic flexures. The kink in the transverse colon lay over the brim of the pelvis and was connected to the anterior surface of the cecum. The great omentum had the usual attachments but was pushed over into the left side of the abdomen and ended in a long pointed process. The liver and stomach were normal in their position.

On opening the sac it was seen to extend upward beneath the right lobe of the liver, and it was seen that the condition was due to a developmental abnormality. On the floor of the sac was the root of the mesentery, attached along an oblique line stretching from the junction of the first and second parts of the duodenum downward and to the left to the termination of the ileum. Its length was about 6 inches. Some five feet of small intestine, presenting a perfectly normal appearance, were also found in the sac. The second part of the duodenum, which was also in the floor of the sac, had a continuation of the mesentery attached to its left side, but was adherent behind to the posterior abdominal wall in a fairly normal way. The third part of the duodenum was freely movable, having a common mesentery with small intestine from which it was indistinguishable. It was not crossed by the superior mesenteric artery, neither was there any trace of a duodenojejunal flexure. The Whole length of the small intestine was only 9½ feet.

22. **Hemorrhagic Typhoid.**—In the first of these cases, during the course of the fever, there developed an extensive

purpuric eruption, which was followed by a generalized bleeding from the mucous membranes, viz., the tongue, gums, bladder and intestines. In the second case hematemesis occurred while the fever was at its height. This happened on three occasions, together with bleeding from the bowel. The third case was one of intestinal hemorrhage complicating typhoid and ending in recovery.

26. **Femoral Hernia Treated by Bone Transplantation.**—Greene's patient, a male, aged 57 years, had a double femoral hernia of about fourteen years' duration. That on the right side was very large and caused great inconvenience; that on the left was smaller, but had recurred a year after an operation previously undertaken. The right-sided swelling was reducible, and the whole hand could be introduced into the ring. The sac was exposed by means of a transverse incision, the contents reduced, and the neck ligatured in the ordinary manner. About 2 inches of the eleventh rib were then excised subperiosteally and the bone was split into two pieces through the cancellous tissue. The femoral wound was then widely retracted and the bone grafts were introduced into pockets made in the periosteum at the back of the pubic bone. There was no trouble in fixing them, and Poupart's ligament was then drawn down to the pectineus fascia, leaving a firm bone plate on its abdominal aspect. The left hernia was dealt with by the ordinary method. The wounds healed soundly and the bone transplant can be felt firmly in position. The shadow of the transplanted bone can be seen in the roentgenogram.

28. **Carcinoma of Liver in Child.**—The points of interest in Freeman's case were the primary malignant growth of a carcinomatous nature in a child of only 3 years of age, the absence of all secondary deposits, and until the end was quite near the comparative absence of pain, tenderness, or of decided dyspepsia or anorexia.

Archives Générales de Chirurgie, Paris

June, VIII, No. 6, pp. 641-768

30 *Cancer of the Testicle. J. Sakaguchi. Commenced in No. 5.
31 *Cancer of Large Intestine in the Young. J. Baur and P. Bertein.
32 Intestinal Pneumatosis. (Kystes gazeux de l'intestin.) P. Mauclaire.

30. **Cancer of the Testicle.**—This article is based on study of museum specimens and a few clinical cases—a total of thirty-two cases of cancer of the testicle. In one case the testicle was the seat of both a cancer and a tuberculous process with no direct connection between the lesions. In four cases there was a history of local trauma. As a rule the cancer does not cause pain or enlargement of the testicle and the chance for operating is often lost before the malignant disease is recognized. The ages of the patients ranged from 2 to 60 or more, one man of 26 succumbing to metastases which are common with cancer of the testicle. Most of the patients were between 30 and 50.

31. **Cancer of the Large Intestine in the Young.**—Baur and Bertein have encountered 2 cases in young soldiers and have compiled 19 other cases in persons under 20. Nine were in the cecum or colon but 12 were at the sigmoid flexure. In 2 cases the patients were under 10; in 11, under 20, and in 7, under 25; all were males except 7 and one monster with a congenital cancer in the colon. In all but 2 cases only seven or eight months elapsed between the first signs of trouble and death; in the others, two and four years. Pain is usually the first symptom to attract attention. It may be localized far from the site of the lesion and it may occur in paroxysms. In one case melena was the first sign of trouble, in 3 cases sudden complete ileus and in another ascites. Three of the patients were cured for the time being in the 5 cases in which the growth was resected.

Archives Générales de Médecine, Paris

May, XCIII, No. 5, pp. 389-480

33 Operative Treatment of Deviation of Nasal Septum. (Redressement de la déviation de la cloison des fosses nasales par la résection sous-muqueuse.) M. Ballerin.

Bulletin de l'Académie de Médecine, Paris

June 23, LXXVIII, No. 25, pp. 839-878

34 *Relief from Toxic Action by Prostatectomy. (De l'action trophique ou désintoxicante de la prostatectomie.) Bazy.
35 Deep, Painful Angiomas in the Members. E. Kirmisson.
36 Technic for Radiography of the Cranium. (Nouveau dispositif pour immobiliser la tête. Diagnostic des lésions de la selle turcique, des tumeurs cérébrales et des altérations des os du crâne.) C. Infroit.
37 Cirrhosis of the Liver and Tuberculosis. Legry.

June 30, No. 26, pp. 879-912

38 Mechanism of Tanning under Exposure to the Sun. (Recherche des éléments constitutifs de la pigmentation humaine dans le cours de l'héliothérapie.) Vidal.
39 *Pellagra. L. Sambon.
40 Spontaneous Healing of Bilateral Renal Processes. J. Castaigne.

34. **Toxic Action of Enlarged Prostate.**—Bazy protests against calling the removal of the enlarged prostate a "prostatectomy" as the prostate itself is not removed but only the proliferating glandular tissue, the adenoma, obstructing the passage. The operation should be called rather "prostatic adenectomy." The prostatic tumors seem to have a directly toxic action in addition to the mechanical obstruction. He reports two typical cases in which the general health showed remarkable and permanent improvement after the operation although there had been no retention of urine previously, as the bladder had been constantly drained and sterilized. He has been very successful with his operations on the prostate, and ascribes this to his practice of tamponing the cavity after removal of the exuberant gland tissue, packing the tampon around a large retention catheter. A large tube in the bladder wound permits continuous irrigation with saline, a drop at a time, the fluid escaping through the catheter. The tube is removed the fourth day and the bladder sutured.

39. **Pellagra.**—Sambon traces the history of pellagra from a description of the disease by Pliny down to the present and shows that it prevailed in those early days in Spain, Italy, France, etc., the foci known then being still in the pellagra zones. He quotes Osler's statement in 1906 that pellagra does not exist in the United States and Babcock's discovery of it in 1906; in 1912 it had been encountered in thirty-two states and 30,000 cases had been recorded. The disease was not known in Great Britain until Sambon in 1912 started out to look for it, and in a few weeks found over 20 cases and now knows of 100, showing that it is endemic in England, Scotland, Ireland, Wales and the Shetland Islands. The disease there is typical pellagra, exactly like the pellagra he has studied so closely in Italy and elsewhere. Pellagra, like malaria, has certain defined zones, and they do not include cities. All the evidence is against direct contagion; not an instance is known of transmission of the disease to others. He adds that he took a pellagrin girl from Italy to England five years ago and she has served as cook in his family since, and has been cured for about two years. Persons who go to reside in a pellagra focus inevitably contract the disease and usually in the first year, while others who work in the pellagra zone in the winter but leave it in the spring escape the disease. Another analogy with malaria is that in the pellagra zones the children are affected; infants escape it until they are old enough to be taken into the fields. He has encountered it in a 3-months babe; one family of five all developed pellagra fifteen days after moving into a pellagra focus. He has encountered cases recently in various parts of France. Sambon incriminates two species of gnats as the transmitters of pellagra, the *Simulium* and the *Ceratopogonines*.

Lyon Chirurgical

July, XII, No. 1, pp. 1-100

41 *Colectomy for Cancer: Twelve Cases. C. Viannay.
42 *Exclusion of the Pylorus by Suture for Gastroduodenal Ulcer. P. Frangopoulos.
43 Hernia of the Bladder: Three Cases. (Hernie de la vessie.) A. Glückstahl.

41. **Colectomy for Cancer.**—Viannay believes that colectomy completed in one stage is the operation of choice for cancer

if the patient's condition permits it. Of course there are cases in which the two-stage operation is to be preferred—if the patient's general condition is very poor or the colon is firmly fixed by adhesions. In all other cases he opens the abdomen, removes the tumor with free excision of surrounding tissues, sutures the bowel at once and closes the abdomen without drainage. He reports in detail twelve cases on which he has operated for cancer of the intestine. In five of them he performed the one-stage operation without a death; in the other seven the two-stage operation was executed, with three deaths.

42. **Exclusion of the Pylorus by Suture.**—Frangopoulos discusses the numerous methods of excluding the pylorus and suggests one of his own by simple suture which he has used successfully in two cases. After the usual aseptic technic he irrigates the stomach with a solution of naphthol in water, makes an opening in the lesser and greater omenta, passes an angiotribe through the opening and crushes the pylorus. He then passes a gauze compress through to the opening, passes his index finger over that back of the pylorus and inserts the sutures with a fine curved needle. The insertion of the sutures takes only two or three minutes. The omentum is then sutured over the pylorus. There was no rise of temperature or other sign of infection in either of his cases. The method has the advantage of extreme simplicity and rapidity of execution.

Lyon Médical

July 12, XLVI, No. 28, pp. 57-96

44 *Bean in Bronchus. (Corps étrangers des bronches.) J. Sallès.

44. **Foreign Bodies in the Bronchi.**—Sallès has found records of 55 cases in which an organic foreign body slipped into the air passages and in 19 cases the foreign body was a bean; in 8 cases a fruit stone; in 10 a pea or coffee bean. The mortality averaged about 50 per cent. and it is probable that an unsuspected foreign body has been the cause of many more fatalities recorded under other headings. In nearly every instance the organic foreign body was "swallowed the wrong way" while the child was laughing hard or coughing, and he insists that parents should be impressively warned of the danger of allowing children to play with dry beans or peas, or laugh when eating them. It is safer to mash beans when served to small children. When the organic foreign body is hard, it should be got out without a moment's delay, but temporizing may be justified with a bean or pea cooked soft as long as there are no signs of bronchitis. Metal foreign bodies are tolerated better than the organic, as a rule, and roentgenoscopy locates them, which is not possible with a bean or similar organic foreign body. Turning the child upside down has little hope of success and he protests vigorously against this dangerous measure unless the foreign body is small, hard and smooth, like a glass bead. With the aid of prompt bronchoscopy the mortality has declined from 50 to 13 per cent. (1909) and Killian reported in 1913 a mortality of only 8.7 per cent.

Presse Médicale, Paris

XXII, Nos. 55-56, pp. 525-544

45 Phenomena of Anaphylaxis as Factor in Asthma. (Asthme: La crise hémoclasique initiale.) F. Widal, Lermoyez, P. Abrami, Brissaud and E. Joltrain.
46 Diagnosis and Treatment of Simple Anemia in Young Children. M. Maillet.
47 Technic for Exteriorization in Colectomy for Cancer. P. Cruet.

Archiv für Kinderheilkunde, Stuttgart

LXIII, Nos. 3-4, pp. 161-320. Last indexed August 1, p. 434

48 *Lactation in Wet-Nurses. C. Brodsky.
49 *Multiple Sclerosis in Boy of 12. C. Stamm.
50 *Acute Nephritis in Infants. F. Frank.

48. **Lactation in Wet-Nurses.**—Brodsky gives in forty-five tables the various details in regard to milk production in seventeen women nursing several babes at once and having the residuum carefully drawn afterward. One of the women, a primipara of 25, did not seem to have enough milk for her own child the first three weeks, but she was given four to nurse and later six, and by the fortieth day she yielded 1,465 c.c. milk and by the seventieth over 4,000 and kept this up for 200 days, once reaching 5,400. By the end of the year she was still giving 2,050 c.c. He thinks her daily average, 3,520 c.c. for 339 days, has established a new record, at least for Switzerland. The yield of milk increases when several babies take the breast and it increases still more when the gland is pumped practically dry afterward.

49. **Multiple Sclerosis in Boy of 12.**—Stamm says that the negative Wassermann, the changes in the fundus, and the improvement under bed rest and eight intragluteal injections of a preparation of thiosinamin all testify that the presumptive diagnosis of multiple sclerosis was correct. None of the symptoms has returned during the eight months to date; speech and gait are normal and the child seems healthy except for a certain sluggishness in the pupil reaction and slightly exaggerated knee and Achilles reflexes.

50. **Acute Nephritis in Infants.**—Frank gives the details of 22 fatal cases and comments on the frequency of the hemorrhagic tendency, which was marked in 9. In 12 cases the trouble seemed to be of blood-borne origin; in 7 it was an ascending pyelonephritis. Some focus of infection elsewhere was evident in every case; several foci in some. In 30 cases of otitis media in infants there was also nephritis in 5; regressive changes in the kidney in 10, and in 4 there were hemorrhages plus inflammation in the bladder. Frank emphasizes the significance of the frequent participation of the urinary passages in gastro-intestinal disease in infants, something of the kind being evident in the great majority of his cases.

Beiträge zur Klinik der Tuberkulose, Würzburg

XXXI, No. 3, pp. 457-648. Last indexed July 25, p. 358

51 Brehmer's Views and Methods of Treating Chronic Pulmonary Tuberculosis in Light of Modern Progress. F. Wehmer and Wolff.
52 Spinach as Both Food and Medicine. (Die Spinate als Arzneinahrungsmittel.) E. R. Kobert.
53 Disappointing Results with Calmette's Tuberculin. F. Köhler.
54 Lizard Tubercle Bacilli in Treatment of Tuberculosis. (Die Blindschleichentuberkulose—Kaltblütertuberkulose—als Heil- und Immunisierungsmittel bei Lungentuberkulose.) Moeller.
55 Ways and Means Now Known to Prevent and Cure Tuberculosis if the World Will Only Apply Them. Blümel.
56 *Technic for Induced Pneumothorax. C. Saugman.
57 Favorable Results with "Old" Tuberculin. (150 Tuberkulinfälle.) Busch.

56. **Induced Pneumothorax.**—Saugman devotes nearly a hundred pages to this practical study of artificial pneumothorax as he has applied it in the course of seven years to more than 200 patients. He gives an illustrated description of the technic and insists on the necessity for keeping the patient in bed until the pneumothorax has been effectually induced, or at least until there is no longer any temperature. Until the lung is adequately compressed by the induced pneumothorax the patient should stay in the sanatorium or hospital; only under exceptional circumstances should the pneumothorax be undertaken in a private residence. The main reason for this is on account of danger from the extra work thrown on the other lung. Saugman says that during the six months' period of "active" pneumothorax treatment the patient should be in a sanatorium equipped for this treatment, and in case of complications a one or two years' stay is advisable. This is his practice at the Vejlifjord Sanatorium in his charge in Denmark. He does not consent to the patient's leaving before this unless he feels quite well, when all the manifestations of the active lung disease have long disappeared and their place been taken by the signs of an extensive pneumothorax—the "clinical cure" of the Italians—and the patient can live under favorable conditions at home, and the injections do not have to be made oftener than three or four weeks.

When all these conditions are realized he consents to the patient leaving and gradually taking up some light occupation. Many of his patients were able to return to their business in six or twelve months and soon felt fully capable.

Of course they lived strictly hygienic lives and under constant medical supervision. The "active" treatment stage once past, all that is necessary afterward is to maintain the pneumothorax. This is the special aim of the International Pneumothorax Association, so that wherever the patient may happen to be at the time he can get his injection by a uniform technic when the gas needs replenishing. Saugman urges practitioners in general to take a course in this technic so that they will be able to make the injection properly when a patient applies to them for the purpose if there is no trained specialist available. Among the points to be borne in mind is that a change from one altitude to another modifies the pressure so that the gas may have to be replenished at once. When it is not replenished at the proper time it may prove impossible to induce an effectual pneumothorax again.

Berliner klinische Wochenschrift

July 13, LI, No. 28, pp. 1301-1348

58 *Atypical Gout. (Atypische Gicht und verwandte Stoffwechselstörungen.) Goldscheider. Concluded in No. 29. (Blutuntersuchungen bei atypischer Gicht.) E. Steinitz.
59 The Thymus and Rachitis. C. Hart.
60 The Wassermann Loses in Specificity as It Becomes More Distinct. (Verschärfung der Wassermann'schen Reaktion.) F. Blumenthal.
61 Improved Technic for Serodiagnosis. (Einige technische Neuerungen in der Dialysiermethode und die Anwendung derselben in der Psychiatrie.) Schroeder.
62 *Direct Roentgenography of Sphenoidal Sinus. (Röntgenbild der Keilbeinhöhle vom Epipharynx aus.) Freystadtl.
63 Primary Syphilitic Lesion from Practice of Holding Pencil between the Lips. O. Heinemann.

58. **Atypical Gout.**—Goldscheider calls gout atypical when there are no attacks of pain but the blood and urate deposits, etc., are fully typical of true gout. In the last two years he has encountered 271 cases of tophi without the gouty attacks. The tophi were in front of the knee in 159, in the shoulder in 122, and in the sacrum or ear in 22 cases each. He mentions only 11 cases of tophi in the fingers. A gritting noise in one or more joints was evident in 112 cases, with or without tophi, and in some of the cases tophi developed later in the joints invo'ved. In his experience with true paroxysmal gout this gritting in the joint was evident in 21.9 per cent. of the men and 58.3 per cent. of the women. In the cases free from tophi, it occurred in 5.4 per cent. of the men and 33.3 per cent. of the women. It was most prevalent among those who took least exercise.

62. **Roentgenography of Sphenoidal Sinus from Within.**—Freystadtl introduces directly into the epipharynx the film on a flat flame.

Correspondenz-Blatt für Schweizer Aerzte, Basel

July 11, XLIV, No. 28, pp. 865-896

64 *Combination Treatment of Varices of the Legs. H. Matti.
65 Pharmaceutical Advertising Matter on Card-Catalogue System. (Vereinheitlichung der Arzneimittel-Reklame.) M. Roch.

64. **Combination Treatment of Varices.**—Matti resects the varicose veins a little at a time, and induces thrombosis in the stretches between by injecting phenol. By proceeding slowly and gradually in this way, he avoids extensive resection of the saphenous vein. The patches of extremely dilated veins are resected but the rest are spared and they merely shrivel and become plugged by the reaction to the injected phenol. Seven cases are reported in which this comparatively mild but extremely effectual combination treatment was applied.

Deutsche medizinische Wochenschrift, Berlin

July 16, XL, No. 29, pp. 1457-1504

66 *Treatment of Threatening Conditions in Pleurisy. J. Grober.
67 *Symptoms from Impairment of Functioning in Central Nervous System. (Ausfallserscheinungen nach Affektionen des Zentralnervensystems und ihre Rückbildung.) M. Rothmann.
68 Phenomena from Adsorption in the Abderhalden Reaction. A. Peiper.
69 Chemotherapy of Experimental Cancer. F. Pentimalli.
70 Criticism of Phenolphthalin Test for Occult Blood. H. Schirokauer and I. Boas.
71 Relations between Flat-Foot and Tuberculosis of the Foot. Syring.
72 Preparation of Blood Platelets Arrests Hemorrhage. (Fermentative Blutstillung durch Coagulen.) G. Hotz.
73 Emphysema Following Stenosis of the Trachea with Goiter. (Erneute Atemnot nach gelungenen Kropfoperationen.) Dobbertin.
74 Copper and Mercury Lamp in Treatment of Ulcus Rodens; Two Cases. H. Weiss and A. Strauss.
75 Does Semen Containing Spirochetes Infect Mother or Ovum First? (Gibt es eine paterne Vererbung der Syphilis.) F. Lesser.
76 Trademarks and Protected Names for Proprietaries. (Wortzeichenschutz für Arzneimittel.) E. Köbner.

66. **Treatment of Threatening Conditions in Pleurisy.**—Grober says that when conditions demand relief from the effusion at once, we can generally assume that the lung is not adherent to the pleura and can thus venture to use a simple puncture needle instead of a trocar. To regulate the pressure and thus avoid doing harm by abrupt changes of pressure, he runs the needle into a fish bladder, when a suitable apparatus is not at hand. The fish bladder gives to the pressure and does not permit air to be sucked into the needle. The same purpose is accomplished by a tube on the end of the needle, the other end submerged in a vessel with salt solution. By raising and lowering the vessel the pressure in the needle can be regulated and the tube clamped with a clothes-pin.

He advises withdrawal of the effusion even when it is of moderate amount if there is fever, indicating a septic course, or if the effusion is bilateral. When there is fever it seems wise to rinse out the pleural cavity thoroughly with some mild disinfectant even if the effusion is apparently limpid. He declares that every practitioner should familiarize himself with the correct technic for thus flushing the pleural cavity through two minute openings or more extensive openings to clean up an empyema. If the effusion is tinged with blood, too much of the fluid should not be evacuated at a time or the hemorrhage may recur. With cancer, the effusion always rapidly collected again in his cases. Mishaps do not occur so often after puncture now as formerly, as we do not wait until it is the last resource. After each puncture the patient must recline for a time and a camphor injection may be useful. Even with all precautions we are still unable to ward off positively danger of embolism of the pulmonary artery.

Pain is best combated by cupping; the blood thus drawn relieves the congestion and pressure below, but he has never witnessed any benefit from strapping the chest with plaster. An important indirect means of influencing the effusion is to apply all possible measures to aid in the throwing off of fluids; calomel aids usefully in this, both by way of the bowels and the kidneys (0.3 gm. three times a day at most). He has always found that this had a very powerful diuretic action; by the second or third day, up to 8 or 10 liters of urine may be voided. Of course the calomel can not be used in this way unless the kidneys are sound; any tendency to nephritis would be much aggravated by it. Another effectual means of throwing off fluids, he adds, is to chew chewing gum vigorously, spitting out all the saliva, keeping this up all day long. He says of sodium salicylate as a diuretic, that its injurious action on the sound kidneys is only transient and should not deter from its use in appropriate cases.

67. **Retrogression of Symptoms after Removal of Growths Causing Compression in the Central Nervous System.**—Rothmann's extensive report of experiments on animals concludes with a most encouraging view as to the remarkable effects that may be realized by systematic, persevering exercise to restore function. Restitution of functioning is materially promoted and hastened by appropriate exercises. Even dogs paralyzed from removal of the brain, soon learned to follow the moving chair with their hind legs when their front legs were placed on the chair. The phylogenetic older functions were lost last under the affection in the central nervous system, and these were regained first. This point should be borne in mind in starting and carrying on the course of exercises. His research fails to sustain von Monakow's conception of diaschisis.

Medizinische Klinik, Berlin

July 19, X, No. 29, pp. 1213-1254 and Supplement

77 Chronic Catarrhal Gastritis. (Magenkatarrh.) W. Wolff.
78 Unusual Types of Tetany; Two Cases. K. Grahe.
79 Combination Orthopedic Treatment of Curvatures of the Spine. (Abbott oder Calot?) E. Mayer.
80 Influencing of the Functioning of the Heart by Various Forms of Baths. Grosch.
81 Honey and Its Adulterants. (Wissenswertes über Honig.) J. Fiehe.
82 Hysteria and Trauma. Placzek. Commenced in No. 28.
83 Present Status of Treatment of Blood-Diseases. II. (Blutkrankheiten.) F. Port.

Mitteilungen a. d. Grenzgeb. der Med. und Chir., Jena

XVIII, No. 1, pp. 1-212. Last indexed June 13, p. 1934

84 "Pulsions Diverticulum" in the Esophagus. S. Maruyama.
85 *Gastric Crises and Vagotomy. A. Exner and E. Schwarzmann.
86 *Tuberculous Stenosis of the Pylorus. W. Pfanner.
87 *Operative Treatment of Exophthalmic Goiter. D. Glaserfeld.
88 *Operative Treatment of Bronchiectasia. A. Wydler.
89 *Gastric Ulcers Remote from the Pylorus. Faulhaber and E. von Redwitz.

85. **Gastric Crises and Vagotomy.**—Exner and Schwarzmann report experiences which show that the vagus forms part of the reflex arcs which are involved in the production of the gastric crises in tabes, and that by severing the vagus nerve the reflex arcs are broken up and hence there can be no more of the gastric crises. They have operated in 14 cases on this assumption and 7 of the patients were freed completely from the gastric crises, 2 others materially improved, and no benefit was apparent in 2. None seemed to be injured by the operation; the crises were not aggravated in any instance. In the others the operation is of quite recent date. Four other surgeons have done vagotomy for gastric crises in a total of 6 cases, curing 3 of the patients; no benefit in 1, and aggravation of the crises in 1. This is a total of 50 per cent. cured; 10 per cent. improved, and 15 per cent. quite recent operations. Resection of the posterior dorsal roots, as applied by Foerster and three others, now has a record of 45 or 48 per cent. cured of 145 patients, with from 11 to 23 per cent. mortality. The vagotomy is comparatively simple; 1 cm. is resected from the vagus on each side. The difference in the outcome may depend on the anatomic conditions encountered; in 9 of their 14 patients the vagus was still a trunk nerve under the diaphragm; in 3 others it branched before piercing the diaphragm, and in one case only some of the branches were accessible. The details and outcome are tabulated for each case.

86. **Tuberculous Stenosis of the Pylorus.**—Pfanner reports a case of this kind in a young man successfully operated on. He had a chronic apical affection and severe stenosis at the pylorus developed suddenly, without premonitory symptoms, suggesting a gastric ulcer. The tuberculous process was in the upper duodenum and involved the pylorus and this entire stretch was resected. The apical process subsided also and the young man seems now, six months later, to be on the road to perfect health.

87. **Operative Treatment of Exophthalmic Goiter.**—Glaserfeld has compiled from the literature 2,032 operations on the thyroid, with a mortality of 5.4 per cent., but the percentage is growing constantly less with better technic and better appreciation of the contra-indications. In 534 cases in which the operation was done for exophthalmic goiter, 349 of the patients regard themselves as cured (65.36 per cent.) and 88 (16.48 per cent.) very much, and 41 considerably improved. The operation was a failure in only 31 and there has been recurrence in 25. In later series the cured and improved reach 73 to 90 per cent. The tachycardia and tremor subsided after the operation in 80 per cent.; the psychoses in nearly all cases; the diarrhea and amenorrhea in all, while the protruding eyeballs subsided into normal place in 53.2 per cent. of all the cases. The only means to estimate the actual value of operative treatment, he reiterates, is to have internists and neurologists make systematic after-examinations from a uniform standpoint, such as is outlined in a question-blank which is given in full. He sent it to fifty leading internists and neurologists in Germany and Austria, and fourteen were returned filled out, but evidently there has been no systematic study of the ultimate condition in these operative cases. Glaserfeld was unable to find any evidence that these patients operated on for exophthalmic goiter were rendered any more susceptible to other diseases thereafter.

All agree that operative treatment should not be considered until medical treatment has been given a thorough trial and shown that it is inadequate to cope with the disease. The slightest sign that any one of the symptoms is growing worse during medical treatment may be accepted as a call for an operation even in the mild cases. This requires that Basedow patients must be under constant medical supervision; when this is the case there is little chance that the best time for the operation will pass unobserved.

88. **Operative Treatment of Bronchiectasia.**—Wydler's experience in the case reported shows that it is better to proceed at once to resect the lobe of the lung involved without wasting time on resection of ribs and ligation of the pulmonary branches. Little if any benefit was realized from four operations on the ribs but after resection of the lobe of the lung almost a complete cure followed. The patient was a young man with bilateral congenital bronchiectasia; the sputum was so offensive that he was unable to hold any job. As the bronchiectasia affects the opposite lobe to some extent, the cure was not absolutely complete.

89. **Gastric Ulcer at a Distance from the Pylorus.**—This study of 52 cases treated by gastro-enterostomy or resection shows that the ultimate outcome is far better with radical, circular resection. When there is extreme hyperacidity it might be wiser to remove even more than this of the stomach mucosa; the Billroth II might be better in this case. Mere gastro-enterostomy is liable to be followed by various complications. Danger of malignant degeneration is not so imminent as generally supposed; there have been no signs of cancer in the seventeen cases of "callous" ulcer operated on from two to five and a half years ago. The long duration and the periodicity of the gastric disturbances are special features of these cases of "pylorus-remote" tumors, and roentgenoscopy clinches the diagnosis.

Münchener medizinische Wochenschrift, Berlin

July 14, LXI, No. 28, pp. 1545-1600

90 Connection between Lymphogranulomatosis and Tuberculosis. P. Baumgarten.
91 Filtrable Virus Responsible for Coughs and Colds. W. Kruse.
92 *Parasitic Twin Monster. (Epigastrius parasiticus.) F. Marchand.
93 Pasteur Treatment and Epilepsy. (Einfluss der Schutzimpfungen gegen Lyssa auf den Verlauf der Anfälle bei Epilepsie.) M. Nikitin.
94 Serodiagnosis by Eliminating the Unspecific and Leaving the Specific Protective Ferments. A. v. Domarus and W. Barsieck.
95 Magnesium Treatment of Tetanus. K. Stromeyer.
96 *Excrescences in Gonorrhea. (Gonorrhoische Granulationen.) G. Stümpke.
97 *Diagnosis of Brain Tumors. (Hirntumordiagnosen.) v. Malaisé.
98 *Deforming Arthritis. (Die deformierende Gelenkentzündung im Lichte neuerer Forschungen.) L. v. Stubenrauch. Commenced in 27.

92. **Parasitic Epigastric Monster.**—Marchand gives an illustrated description of a young man who has a twin monstrosity growing from his stomach region. Born in 1884 of Italian parents at Buenos Aires, J. J. Libbera is now a young man of average weight and size, apparently normal except for the headless male twin growing from his stomach region, about the size of a child of 3. The mother bore another pair of united twins among her thirteen children and one uncle was badly deformed.

96. **Excrescences of Gonorrheal Origin.**—Klingmüller describes six cases in which there was proliferation of tissue on the perineum or anus in women with a gonorrheal process in the urethra, cervix or rectum. In one case there were also condylomas. The excrescences were something like a cock's comb and some were painful but none bled. They were excised in most of the cases.

97. **Diagnosis of Brain Tumor.**—A bright, active and ambitious boy of 11 in a few weeks became lazy and slovenly, and began to steal money and bury it. Nine months after this change in character had been noticed, other symptoms of a brain tumor developed and a sarcoma was found in the left

cerebellum. The accompanying hydrocephalus had modified the corpus callosum to such an extent that pronounced left apraxia resulted, diverting attention away from the true seat of the lesion, particularly as the tumor was of such soft tissue that for a long time it caused no symptoms of pressure. In a second case the symptoms pointed unmistakably to a cerebellar tumor. Except for the changes in the gait, they all came on with a stormy onset, with fever, two weeks before the attempt at operative treatment. The sarcoma was not reached and the girl of 15 died the next day.

98. **Deforming Arthritis.**—Stubenrauch emphasizes that the light cast on deforming arthritis by recent research calls for treatment based on static, mechanical and functional principles, as he describes in detail. A history of joint trouble should be borne in mind in selecting a trade or business; in continuing at work, unless the joint can be spared, the process is liable to keep on a progressive course. Early recognition of the joint process is thus indispensable to ward off serious mischief and deformity, and modern methods of diagnosis render this possible, especially when the pain and other subjective and objective findings are correlated with the weight-bearing task and the roentgenograms. Gentle exercise of the joint wards off ankylosis and should be supplemented by every possible measure to stimulate return of normal conditions in the various tissues of the joint. The process with deforming arthritis starts in the joint cartilage, not in the bones, and it is these changes in the cartilage which impair its elasticity and throw the joint out of gear, entailing the deformity. Recent microscopic study by G. Pommer of Innsbruck has confirmed the combination of functional and anatomic factors in the production of deforming arthritis.

Wiener klinische Wochenschrift, Vienna

July 16, XXVII, No. 29, pp. 1053-1092

99 Spirochete Findings in Rabbits. L. Arzt and W. Kerl.
100 Alimentary Galactosuria in Exophthalmic Goiter. P. Szel.
101 Abortive Treatment of Syphilis. J. Saphier.
102 Diagnosis of Postoperative Intestinal Ulcer. (Zur Diagnostik des postoperativen jejunalen und Anastomosenulkus.) T. Barsony.
103 Comparison of Results with Human and Animal Organs in Serodiagnosis. (Vergleiche zwischen den Resultaten des Abderhaldenschen Dialysierverfahrens mit Tier- und Menschenlunge.) O. Melikjanz.

Zentralblatt für Chirurgie, Leipzig

July 18, XLI, No. 29, pp. 1209-1248

104 *Thread and Wire Extension from Skin. (Besondere Formen der Extension.) R. Klapp.
105 Forcible Correction of Club-Foot in Children over Padded Segment of Broom-Stick. (Billiges Hilfsmittel zur Redression kindlicher Klumpfüsse.) A. Nussbaum.

104. **Thread and Wire Extension from Skin.**—Klapp applies extension in severe cases of ischemic paralysis of the arm after fracture by a set of double silk threads each passed through the pulp of a finger and all drawn and tied together a foot beyond the tips of the fingers. A 5-pound weight is then suspended for twelve or fourteen days from the knot thus formed. The skin never tears out, the fracture heals and contracture is warded off in both arm and hand. He often has found this technic extremely useful after operations on the hand and arm. A thread can be passed in the same way through the skin of the heel; he found this of great advantage in a recent case after operating on a babe for congenital deformity of the leg. For adults he prefers a wire passed slanting through the heel on each side, the ends drawn out at the bottom of the heel. He applied this technic in eleven cases during the Balkan campaign and found it as effectual as nail extension. The wire or thread must be drawn through the soft parts exactly in the direction in which traction is to be exerted. Otherwise the pressure from the wire cutting into the tissue will cause necrosis.

Zentralblatt für Gynäkologie, Leipzig

July 18, XXXVIII, No. 29, pp. 1017-1048

106 *Early Sign of Pregnancy. (Ein häufiges Frühzeichen der Schwangerschaft.) A. Labhardt.
107 Abdominal Intraperitoneal Correction of Retroflexion of the Uterus. W. Rindfleisch.

106. **Early Sign of Pregnancy.**—Labhardt says that the dregs-of-wine discoloration of the mucosa of the vagina characteristic of pregnancy can be detected very early in a transverse strip extending to right and left between the mouth of the urethra and the base of the hymen, closer to the latter than to the urethra. This broad strip of livid tint can be detected usually long before the discoloration is evident elsewhere in the vagina. It is a sign of the venous hyperemia set up by the fact of the pregnancy, and is liable to be encountered with a tumor in the vicinity. But as a rule it is a simple and useful early sign of pregnancy. The discoloration occurs usually most pronounced in women who have already borne children.

Gazzetta degli Ospedali e delle Cliniche, Milan

XXXV, Nos. 83-85, pp. 865-896

108 The Russo and Fuchs-Lontz Methylene Blue Reactions in the Urine Not Specific for Any Disease. (Reazioni urologiche al bleu di metilene: Reazione di Russo; Reazione di Fuchs e Lontz.) U. da Pozzo.
109 *Arrest of Inflammation by Shutting off Sensory Impulses. (Nuovo contributo clinico alla teoria dell'inibizione infiammatoria per parte de sostanze ad azione anestetica narcotica.) T. Silvestri.
110 Nascent Iodin Local Treatment of Uterus. (Airolo ed acqua ossigenata nella medicazione della cavita uterina.) A. Cerioli.

109. **Arrest of Inflammation by Analgesics.**—Silvestri systematically kept four patients with acute cerebrospinal meningitis under the influence of a general anesthetic, hoping thus to allay the local inflammation. The ordinary measures, ice to the head, etc., were applied as usual, but these were supplemented by calcium bromid by the mouth and in enemas, and chloral alternating with morphin. The secret of success is to begin with the analgesics at the very outset of the inflammation and keep it thus under control. He applied the method also in a case of severe polyneuritis with herpes zoster and in several cases of convulsions in young and old. The dosage varied with the case, but he gave the meningitis patients up to 8 or 12 gm. of calcium bromid a day. He found the results very encouraging, confirming the inhibiting action on inflammation of shutting off sensory impulses.

Policlinico, Rome

July 12, XXI, No. 28, pp. 1001-1036

111 *Hemoglobinuria in Hookworm Disease. (Patogenesi dell' anemia da parassiti animali.) L. Manzi.

July, Medical Section, No. 7, pp. 293-340

112 Indol and Its Derivatives. O. Cantelli.
113 Technic for the Wassermann Test. (L'uso del siero attivo nella sierodiagnosi della sifilide col metodo di Wassermann.) M. Mantovani.

111. **Hemoglobinuria with Hookworm Disease.**—Manzi reports the case of a girl of 14 with a puzzling syndrome of pains and other disturbances in the bladder, dark-colored vomit and urine and extreme pallor but no tube casts. She tired easily and became irritable and melancholy. The discovery that a neighbor had recently returned from a long stay in a hookworm country finally gave the clue to the trouble, and under a course of thymol treatment ova were found in the stools and recovery followed. There did not seem to be intestinal hemorrhage from the mechanical action of the helminths; the blood-corpuscles were evidently being destroyed by the toxin. The eosinophilia and leukocytosis were probably part of the defensive reaction. The temperature kept persistently above normal during the hemoglobinuria stage.

Riforma Medica, Naples

July 11, XXX, No. 28, pp. 757-784

114 Nature's Method: Setting Up Compensation (Cardiopatie.) G. Rummo.
115 The Evolution of Psychiatry. E. Rossi.
116 *Changes in the Blood-Serum after Venesection. (Modificazioni della reazione de siero di sangue dopo il salasso.) C. Rolla. Commenced in *No. 27*.

116. **The Blood-Serum after Venesection.**—Rolla has found that in normal persons and those with diseases which do not alter the composition of the blood, the blood-serum either does not change after venesection or it grows more alkaline. On the other hand, in diabetes, chronic nephritis and liver disease and in nephrectomized animals and those under the

influence of uranium nitrate, the blood-serum veers toward acidity after venesection. He theorizes to explain this and says that his findings suggest the importance of following up the venesection with subcutaneous injection of an alkaline fluid to render neutral the pathologically acid serum.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

LXIII, No. 12, pp. 865-936

117 *Lupus. A. S. Jacobson.
118 Improved Technic for the Differential Leukocyte Count. P. Nieuwenhuijse.
119 Parthogenesis of Human Beings. A. M. Benders.
120 Procreation under Influence of Alcohol. (Eugenese en alkohol.) W. D. van Renesse.
121 Repose Sometimes Aids and Sometimes Hinders Rapid Recovery after an Industrial Accident. D. de Snoo.

No. 13, pp. 937-1024

122 Fibrin as a Factor in the Coagulation of the Blood. E. Hekma.

No. 14, pp. 1025-1116

123 Radiotherapy of Cancer. G. F. Gaarenstroom.
124 Plague in Java. J. G. Sleeswijk, M. J. Planten and J. J. Van Loghem. Commenced in No. 13.
125 Isolation in Contagious Diseases. P. de Vries.

117. **Lupus.**—Jacobson found involvement of the mucous membrane in nose, throat or larynx in 80.8 per cent. of 104 cases of lupus of the face. Treatment of lupus therefore should include the mucosa to be permanently effectual.

St. Petersburger medizinische Zeitschrift

XXXIX, Nos. 12-13, pp. 147-168

126 *Suture of Heart; Two Cases. (Herzchirurgie.) H. Fowelin.
127 Recurring Typhoid. J. Kusick.
128 Tests of Kidney Functioning in Nephritis. M. E. Mirowsky.
129 Pathogenesis and Treatment of Cardiovascular Disease. (Herz- und Gefässkrankheiten.) D. Galli.

126. **Suture of the Heart.**—Fowelin reports operative treatment of a revolver injury of the heart with recovery and of a stab-wound in which he was not able to save the patient. The Obuchow Hospital, he adds, has now a record of 28 cases of suture of the heart, with recovery of 8 of the patients; the hospital in Fowelin's charge has done 4 operations of the kind and saved 2; Hochenegg 5, with 3 saved, and von Eiselsberg 7, with 2 saved. Fowelin did not attempt drainage in one of his cases and he attributes the patient's death nine weeks later to complications which might have been avoided by drainage.

Russky Vrach

XIII, Nos. 13-14, pp. 465-524

130 *Value of Ambard's Formula in Determination of the Renal Function. B. N. Kholzoff.
131 *Postoperative Serous Meningitis. V. M. Minz.
132 *Surgical Treatment of Epilepsy. N. I. Korotneff and V. N. Minz.
133 *Hydrophobia: Two Instructive Cases. V. G. Oushakoff.
134 Prolonged Retention of Placenta after Full Term Extra-Uterine Pregnancy. P. P. Parenago.
135 Experimental Cancer. A. V. Chichkin.

130. **Ambard's Formula in Determination of the Renal Function.**—Kholzoff has been giving a thorough trial to Ambard's formula for estimating the work of the kidneys by the proportion between the urea in the blood and in the urine. This "uremic constant" was described in detail in The Journal, March 7, 1914, page 813. Kholzoff thinks that the total amount of urea and chlorids eliminated by the kidneys during the twenty-four hours is of greater import than the percentage in urine or blood. At the same time he lauds the Ambard index as accurate and reliable, giving a better idea of the renal function than any other method. He says the method is not reliable for determining the function of each kidney separately, because the technic of collecting urine from each kidney is not perfect. Yet it is highly important to collect the whole amount of urine without any losses. Therefore, this method can have only a limited use, as, for instance, for the purpose of determining the function of both kidneys, or when there is but one kidney from congenital deformity or from disease.

131. **Serous Meningitis with Brain Tumors.**—This according to Minz is a frequent occurrence with brain tumors, not only before trephining and removal of the tumor but even after a successful operation. There is liable to be enormous accumulation of the cerebrospinal fluid, especially with tumors of the posterior cranial fossa or corpora quadrigemina. This causes symptoms of meningism or the symptoms of actual meningitis may occasionally become exacerbated (severe headache, vertigo, vomiting, etc.). Minz recommends puncture of the subarachnoid space, which he has successfully performed in a case of a glioma of the corpora quadrigemina, of a tumor of the middle skull cavity, two cases of successfully removed cerebellar cysts, and in one case of psammoma of the occipital lobe of the brain.

132. **Operative Treatment of Epilepsy.**—According to Korotneff and Minz, surgical treatment of so-called genuine epilepsy is not justified or only when the patient demands same. Temporary improvement may be obtained in some cases. True cortical epilepsy, including the traumatic due to some lesion of a perfectly healthy brain, may occasionally yield to an operation, but a success can not be guaranteed in every case. Trephining is alone justified.

133. **Rabies.**—Oushakoff declares on the basis of two cases of hydrophobia that even insignificant skin lesions caused by a rabid animal may cause hydrophobia, and that a dog bite can be held harmless only when the animal has been kept under observation by a veterinary physician during one week, at least, and found healthy. Otherwise the suspected person must be treated in a Pasteur institute. In the presence of symptoms of hydrophobia, accelerated pulse and general excitement, the surrounding persons must be warned in regard to the possibility of infection, and, if necessary all should be given prophylactic Pasteur treatment which proves as a rule very efficient. The young women were not actually bitten in his two cases. Both died of the rabies; it was not recognized at first. He says that pain at the point of infection may be a clue to an early diagnosis.

Hygiea, Stockholm

LXXVI, No. 12, pp. 589-752

136 The Biologic Effect of Exercise in Heart Disease. (Gymnastikens verkningssätt vid hjärtsjukdomar.) E. Zander.
137 *Embolic Aneurysm as Complication of Acute Endocarditis. O. Lindbom.

137. **Aneurysm with Acute Endocarditis.**—Lindbom reports a case each of aneurysm in splenic or in iliac artery as a complication of acute endocarditis. His review of the literature on the latter shows that embolic aneurysms are comparatively common with acute endocarditis. They develop mostly in the arteries of the abdomen or limbs and may rupture. The symptoms of internal hemorrhage then dominate the clinical picture or there may be merely sudden violent pain with a pulsating enlargement of the artery. This was the most frequent type in the 18 cases he has found in the literature. Operative removal of the stretch of the vessel involved has given good results in several cases and should be recommended on account of the dangers from rupture. The tendency to embolism persists however and new aneurysms may be formed. Three clinicians have reported cases in which the aneurysm developed in the coronary arteries.

Ugeskrift for Læger, Copenhagen

July 9, LXXVI, No. 28, pp. 1231-1274

138 *Roentgenotherapy of Uterine Hemorrhages and Fibromas. H. J. Panner and S. Kjaergaard. Concluded in No. 29.

138. **The Roentgen Ray for Uterine Hemorrhage and Fibromas.**—Panner and Kjaergaard review some of the recent literature on this subject and tabulate their own experiences. They indicate that one can rely on curing uterine hemorrhage with the Roentgen rays when the ovaries are responsible for the hemorrhage. The functioning of the ovaries can be checked by the Roentgen exposures and the myomas themselves generally shrink under them too. The treatment in these cases need not be intensive. Of his ten patients with uterine hemorrhage without a tumor, all but one were cured by the exposures and in the eight fibroma cases the tumor subsided materially in all but one. The great drawback of roentgenotherapy is that under it a cancer might be allowed to slip past the operable-curable stage.